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WILLIAM T. LUSK, M. D. JAMES B. HUNTER, M. D.

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MEDICINE AND THE COLLATERAL SCIENCES.

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Original Communications.

ART. I.—*Electrolysis,*[1] *and its Application to the Treatment of Disease.* By A. D. ROCKWELL, M. D., New York.

THE increasing interest manifested by the profession in all the departments of electro-therapeutics and electro-surgery induces me to offer a few words on electrolysis—a subject of the greatest importance, and, in its application to disease, one of the most fascinating studies to which the human mind can be brought. Before proceeding to discuss the action of the galvanic current on the dead and living tissue, I will define some of the terms that are commonly used.

An electrolyte (*ηλεκτρον* and *λυω*—to decompose) is any compound substance that can be directly decomposed by the current.

To electrolyze a body is to chemically decompose it by the current. Substances widely vary in the readiness with which they are decomposed, but manifestly no substance can be an electrolyte unless it is in some measure a conductor. Every electrolyte must contain more or less of water; but pure water is decomposed with difficulty, and the readiness with which any electrolyte is decomposed depends on the quantity of cer-

[1] Read before the New York Medical Journal Association, February, 1871.

tain salts contained in solution. Hence, blood and muscular tissue are good electrolytes.

The anode and cathode refer to the points of the decomposing body that are in contact respectively with the positive and negative pole. Electrolytes are resolved under the action of the current into anions and cations, which appear at their respective electrodes in the proportion of their atomic weights or multiples of their atomic weights. Water, for example, is an electrolyte that evolves two *ions*—oxygen and hydrogen; oxygen goes to the anode, and is the anion; hydrogen goes to the cathode, and is the cation.

Electrolytes.	Composition.	Cations.	Anions.	Relative Proportions.
Hydrochloric acid	H.CL.	H	CL	1 to 35.5
Chloride of sodium	Na.Cl.	Na.	Cl	23 " 35.5
Sulphuric acid	H_2SO_4	H_2	SO_4	2 " 96
Sulphate of soda	Na_2SO_4	Na_2	SO_4	46 " 96

The galvanic or constant current is chiefly used to obtain electrolytic action, although the faradic current undoubtedly possesses some chemical power.

In regard to the conditions of quantity and intensity, it must be remembered that, in the operation of electrolysis, they are exactly the reverse of those required for the purposes of galvano-cautery. For the latter operation, quantity with moderate tension is required, and this is obtained by a considerable number of elements of medium size.

The statement that very large elements are necessary, or that only some special form of battery will produce results, is undemonstrable. Some batteries are more convenient than others and give a more constant current, but all will, to a greater or less extent, produce decomposition. If the current be weak, then the applications may be longer. It is doubtless better, however, to use elements of good size. An evidence that cells that are very small and that give comparatively little quantity, will yet produce electrolysis, is found in the fact that decomposition of inorganic substances in water is effected, as Faraday and others have shown, by statical electricity and the voltaic pile. Now, the quantity of statical electricity is exceedingly small, and the quantity of the voltaic pile is not great; therefore it follows that a very large quantity is not

necessary to produce electrolysis, and small, even very small elements will decompose.

For the purposes of electrolysis, when the action of the positive pole is desired, the needles should be of some metal that readily resists oxidation. Gold or gilded steel needles answer well for the negative pole. The needles should be insulated at the upper part, with hard rubber, to prevent the action of the current on the skin and subsequent inflammation.

The electro-chemical action that takes place during the operation of electrolysis is by no means thoroughly understood. The researches of Faraday, however, have demonstrated that where several substances are decomposed by the action of the current, the elements evolved are definite in quantity and are electro-chemical equivalents of each other. It has been found also that electrolytic action is very materially modified according to the nature of three important factors, viz.: 1. The composition of the substance decomposed; 2. The material of which the electrode is made; 3. The strength of current employed. The iodide of potassium, for example, readily decomposes under a very feeble current—the iodine and oxygen going to the positive, while the hydrogen and alkalies go to the negative pole, changing the solution to the color of iodine. If, now, we substitute for the platinum electrode connected with the positive pole an electrode of lead, the lead immediately oxidizes, and, combining with the iodine, deposits the iodide of lead. A solution of common salt, also, when submitted to the influence of the galvanic current by means of platinum electrodes, decomposes almost as readily as the iodide of potassium. Chlorine appears at the positive, and hydrogen and oxide of sodium at the negative pole. By substituting, again, for the positive platinum electrode an electrode of copper, the copper oxidizes, combines with the chlorine, and forms chloride of copper. These simple tests well illustrate the important modifications produced during electrolytic action, according to the nature of the electrodes employed.

For electrolytic experiments on various substances platinum is the best electrode, because it is not acted on. Copper and other metals may be used, but the secondary action which occurs in the decomposing body greatly complicates the experiment.

Electrolysis is produced most quickly and effectually when the current is made very dense by the use of small needles; it is, however, entirely demonstrable, that definite electro-chemical action is excited when either one or both of the electrodes are broad, flat disks. By substituting for the needle or wire electrode in the potassium solution a flat disk, decomposition at once takes place, and if the strength of the current is sufficiently increased to compensate for the decrease of density by the increase in the size of the electrodes, the solution will almost immediately begin to assume the color of iodine. From this illustration it can be readily conceived that electrolytic as well as electro-tonic effects may be produced by the ordinary applications of galvanism, and especially when ulcers are treated by metallic plates or moist sponges.

In addition to the solutions already mentioned, we have experimented on a variety of fruits and vegetables, and also upon eggs, blood, and dead tissue. In most fruits and vegetables electrolytic changes take place with readiness, on account of the large quantity of water and acids they contain. When a pear, potato, or an apple, is submitted to electrolyzation, the part pierced by the negative pole changes in color, and withers. The process of drying and discoloration goes on after the operation is discontinued. The phenomena that occur during electrolyzation of the white of an egg are very striking. White flakes form rapidly around the negative pole. These soon become detached, and float upon the surface of the albumen. The process may be repeated until the whole surface is covered with a white mass, resembling froth. This mass is not coagula, but is formed by the nascent hydrogen, mechanically driving asunder the particles of albumen.

The phenomena that are presented during electrolysis of dead tissue afford an interesting and suggestive study. During the passage of a galvanic current by means of needles through a piece of raw beefsteak, bubbles of hydrogen appear at the negative pole, while the tissue in the immediate neighborhood becomes decidedly shrunken. At the positive pole a white froth appears, chlorine is evolved through decomposition of the saline solutions, and the part surrounding the needle becomes hard and tough. This process of decomposition is at-

tended by a very distinct hissing or frying sound, and the temperature of the part that is being electrolyzed is decidedly increased. Chemical examination shows that oxygen and albumen go to the positive, while hydrogen and coloring matter go to the negative pole. The beef gradually becomes dry and changed in color, its watery constituents are absorbed, and so electrolytic action becomes less and less decided until it altogether ceases. For some hours subsequent to this process, that portion of the beef acted upon continues to contract and shrivel up, until it presents the appearance of a charred mass.

When fresh blood is submitted to the action of the galvanic current, foam of a light-yellowish color collects on and around the negative pole, while near the positive a dark, clotty mass appears, in strong contrast with the color of the surrounding blood. As might be supposed, litmus-paper gives at the anode an acid reaction, and at the cathode an alkaline reaction.

Dr. Victor V. Bruns,[1] in his late work on galvano-caustic and electrolysis, has recorded some interesting experiments on the circulating blood. His method of procedure was to open an artery or vein, and by judicious and well-directed pressure to prevent both the escape of the fluid and its too rapid flow. He then inserted into the opening a needle connected with the positive pole, when a light-colored, spongy clot rapidly formed around it and adhered also to the coat of the artery. At the negative pole, when applied in the artery, no clot was formed, but an abundance of gas and bloody foam appeared.

The relations which the very interesting and suggestive phenomena here recorded sustain to the practical application of electrolysis in the treatment of disease are not sufficiently understood to render the subject a complete or exact science.

Clinical experience is the only sure basis on which to build, and this teaches that living is more readily electrolyzed than dead tissue. This is accounted for from the fact that living tissue is capable of the process of absorption, and that its solutions are warmer and therefore better conductors. When, therefore, a tumor capable of being electrolyzed is submitted to the action of the galvanic current, a threefold action is produced:

[1] Die Galvano-Chirurgie oder die Galvano-Kaustik und Elektrolysis bei chirurgischen Krankheiten. Tübingen, 1870, p. 73.

1. Its fluid constituents suffer decomposition. Hydrogen and alkalies, soda and potassa, go to the cathode, and oxygen and acids to the anode. While electrolytic action thus takes place at both poles, it is evident that this action is most vigorous and more readily produces absorption in living tissue at the cathode. At the anode, however, decided chemical action takes place and successful results are obtained by it. But since, as we have demonstrated, electrolytic action is modified by the composition of the electrolyte, and the character of the poles, it is probable that a more extended clinical experience will establish more definitely the important fact that some conditions of disease are most successfully treated by the positive, and others by the negative pole.

2. Absorption is hastened by the chemical effects of the current and the mechanical and irritating effects of the needles, and may slowly continue for weeks.

3. Disintegration and atrophy take place. If the part acted on by the current be a small wen, wart, or nævus, the tissue may become changed in color, dried and shrivelled, and almost entirely disappear during the operation.

A word concerning the general method of electrolyzation, and the method of testing batteries to ascertain their comparative advantages for electrolysis. In treating the various forms of tumors, aneurisms, and varicose veins, serous effusions, wounds, and ulcers, both poles may be made to operate simultaneously; or, if only the negative pole is used, the current is completed by placing the positive, connected with a sponge-electrode, on a neighboring part.

Considerable pain is caused by the introduction of the needles, and frequently an anæsthetic is necessary. The length of the *séance* varies from a few minutes even to one hour. In treating tumors, much depends upon their character. The intensity of the current and the length of the *séance* depend, as has been shown, on the special purpose in hand. The general rule is, the harder and larger the extent of tissue to be acted on, the greater the quantity and intensity of electricity required. The composition of an erectile tumor is such that it offers but little resistance to the passage of the current and readily electrolyzes, while a scirrhous tumor offers great

resistance, is with difficulty acted upon, and during and immediately after electrolysis may exhibit no change, except a slight enlargement and softening due to the disengagement of its gases.

Through the researches of Faraday we can test the quantity of electricity generated by any form of battery, by means of a galvanometer. But, in the operation of electrolysis, intensity also is needed, and a rough but approximate test for both quantity and intensity is found in the iodide of potassium. The rapidity with which this yields to the current, and the amount of iodine evolved in a given time, or quantity of water decomposed, approximately indicate the capacity of a battery for electrolytic purposes.

When we come to inquire concerning the practical results yielded by electrolyzation in its application to tumors and other surgical diseases, the field opened before us is a most encouraging one. A great variety of abnormal growths, nævi and papillary enlargements, sebaceous, hydatid, and erectile tumors, goitres, and even cancers, are reported as having been successfully treated by electrolysis. Our own experience in this department of electro-therapeutics, not yet very extensive, has been on the whole measurably successful.

Morbid Growths (non-malignant).

Case I.—The first was an erectile tumor of small size, located on the penis. A needle connected with the positive pole was introduced into the *mass*, and a current from ten cells of Storher's battery was allowed to pass for exactly five minutes. During the operation the tumor could be seen to change in color, and to rapidly decrease in size. At the close of the *séance*, hardly a trace of any enlargement could be felt.

Case II.—In April of this year, I saw, with Dr. D. F. Reynolds, a little child aged eight months, afflicted with an erectile tumor in the right cheek, that measured about one and a half inch in width, and from one-half to three-quarters of an inch in depth. In the presence of Dr. Frank Hamilton and his class, I operated at Bellevue Hospital, by introducing into the four quarters of the tumor four small gilded-steel needles, insulated to within one-quarter of an inch of the points. During the passage of a current of very moderate tension, the enlargement gradually grew harder and more prominent as the blood coagulated, and at the expiration of eight minutes when the needles were withdrawn, the part was quite solid. The process of absorption soon became manifest, and at the present date, June 12th, it is but one-fourth ($\frac{1}{4}$) of its original size. Absorption still goes on

and it will take but a few more weeks for every vestige of the tumor to disappear.

Case III.—A patient, sent to us by Dr. Andrews, to be treated for a form of paralysis, complained also of a soft tumor about the size of a walnut, and situated on the back near the spine. The enlargement appeared to be fatty in character. Needles connected with both the positive and negative poles were introduced into the tumor, and a current of great tension from eighteen cells was allowed to pass for twenty minutes. During the *séance* the tumor changed in color and grew smaller, and in a few days subsequently disappeared entirely.

Bruns[1] reports a remarkable case of fibrous polypus of the naso-pharyngeal space—that had been once removed by a surgical operation, but which very soon returned, and became so large that it projected into the mouth, and also into the left nasal passage. The electrolytic treatment was begun May, 1869. One needle was put into the naso-pharyngeal, and the other into the nasal portion. The patient was treated in this way, with some short interruptions, over ten months. By March, 1870, one hundred and thirty sittings had been held.

The polypus was so much reduced in size, that it could not be seen either through the nasal passages or in the mouth, and only a small portion remained that could be felt by the finger. Improvement began soon after the electrolytic treatment was commenced.

Case IV. *Fibrous Tumor of the Uterus.*—I have had under observation a case of fibrous tumor of the uterus, and, although the electrolytic process by means of the introduction of needles has not been employed, it may be proper to refer to it in this connection.

The patient is under the care of Dr. Peaslee, who desired me to test the effects of some form of electrolyzation. The tumor is sub-peritoneal in character, on the right side, and about the size of the two fists. The resultant symptoms of which the patient especially complained, were severe shooting-pains down the right leg, together with a decided anæsthesia, and loss of power that seriously interfered with locomotion. I alternately passed both currents through the tumor, using the faradic internally and the galvanic externally.

A few applications entirely dissipated the severe pain and the anæsthesia, and restored the strength of the limb.

It is not impossible that this treatment, persevered with faithfully, may in time cause a reduction in the size of the growth. Should it fail to do so, it may possibly be advisable to resort to electrolyzation, by introducing insulated needles into the mass.

Cancers.—In regard to the electrolytic treatment of cancer, M. Bruns[2] remarks that in no case has he obtained a complete removal of, or even a very great reduction in the size of,

[1] *Op. cit.*, p. 85. [2] Ibid.

such tumors, by the absorption resulting from the electrolytic process. He states that the parts of the tumor where the needles are inserted become more or less burned or destroyed, and that suppuration takes place, afterward granulation and cicatrization, and finally some shrinking, with a slight reduction in the size of the tumor. If a number of needles were inserted so as to cut off some part of the tumor, the part so enclosed could be destroyed. In this way he succeeded in reducing the size of a number of cases, but complete atrophy or absorption, as a result of this treatment, he has never seen. He states that, perhaps, his ill-success may be due to the fact that the patients did not persevere.

Gherini and Althaus, who have studied this subject, have obtained only incomplete results—a diminution of the lancinating pains, but no complete removal. Manfredieu (1869) reports a complete removal of a "cancer villosus of the lower part of the thigh by electrolysis."

One successful and a number of unsuccessful attempts in the treatment of this disease we have reported elsewhere.

An operation that was performed in one of the wards of Bellevue, in the presence of Profs. Wood, Hamilton, and other physicians, failed to accomplish successful results. It was satisfactory in so far as it seemed to show that, in a certain class of morbid growths of a semi-malignant character, electrolytic action may have a tendency to accelerate rather than retard progress.

Case V.—The patient, a robust young man, of twenty-five or thirty, was suffering from a myxosarcoma as large as the two fists, situated on the left pectoral muscle. The tumor had already been removed by Prof. Wood, and at his suggestion it was decided that electrolysis should be used. I operated by the needles on three different occasions, at intervals of about a week. After each operation a large quantity of bloody foam, formed by the action of the nascent hydrogen, escaped from the parts penetrated by the needles connected with the negative pole. The tumor became decidedly softer; but in this case the irritation caused by the current evidently tended to hasten ulceration, and to produce unsightly fungoid growths around the holes made by the needles. The tumor was subsequently removed a second time by Prof. Wood.

Ulcers.—The continuous current applied to chronic ulcers will frequently produce a growth of healthy granulations after all ordinary means have failed.

Case VI.—The rapidity and completeness with which the electrotonic and electrolytic effects of the current may occasionally be manifest, in the healing of ulcers, were observed a short time since in the case of a little patient of mine. An abrasion near the ankle—some twelve months before—had resulted in an ulcerated surface about the size of a silver dollar. The ulcer was in a relaxed, torpid condition, and had resisted the ordinary applications. I made an application of the faradic current around the outer border of the diseased part, and then with the positive electrode of silver placed over the ulcerated surface, and the moist sponge of the negative pole applied to the opposite portion of the limb, a mild galvanic current from four zinc carbon cells was allowed to pass for five minutes. On the following day the operation was repeated.

I saw no more of my patient until several months subsequently, when the mother called at the office with the child. She stated that, a few hours after the second operation, a fine gauze-like covering formed over the ulcer, gradually growing thicker, until a firm scab covered the part. In about two weeks the scab fell off, leaving exposed a healthy surface, which quickly healed.

Skin-Diseases.—A number of the diseases of the skin may be treated electrolytically by means of broad electrodes of various shapes and sizes, covered with flannel, linen, or with simple metallic plates. It is probable that every passage of a galvanic current of much strength through the body is attended by more or less electrolytic action, and it may with entire reasonableness be presumed that, in all the ordinary applications of the galvanic current to the central or peripheral nervous system, a tendency to chemical change is excited.

Case VII. *Case of Eczema.*—In the case of an old gentleman, who had for some months suffered from the chronic form of eczema of the face, the electrolytic and electrotonic effects of the current were strikingly manifest. Alternate applications to the diseased part, of the galvanic and faradic currents, were followed by a favorable change in the character of the eruption in less than a week, and at the present date, less than a month since the first application, the cure is approximately accomplished.

Case VIII. *Case of Psoriasis of Twenty-two Years' Standing.*[1]—A case of psoriasis of twenty-two years' standing, with large spots on the hypochondriac and epigastric regions, and on the legs, in a woman of middle life, was treated by galvanization of the spots, together with galvanization of the sympathetic. Both poles were used, but chiefly the negative. The effects were decided and immediate, and in the course of two months the spots had disappeared. The treatment was given three or four times a week.

[1] The three following cases were treated, in conjunction with Drs. Piffard and Beard, at the Dispensary for Skin-Diseases.

To differentiate between the effects of the peripheral and central treatment was hardly possible. The question whether galvanization of the spine or sympathetic may of itself have an effect on psoriasis, or other diseases of the skin, can only be settled by a number of comparative observations.

In another case of psoriasis, peripheral galvanization in a man of middle life has obtained decided though not rapid results, and it is now proposed to combine, with the peripheral treatment, central galvanization.

Case IX. *Sclerosis of the Skin.*—A case of sclerosis of the skin, a disease which is usually regarded by dermatologists as incurable, has derived benefit from galvanization, chiefly with the negative pole, and with a current of as much strength as could be conveniently borne. The patient is still under treatment.

Case X. *Prurigo.*—A case of prurigo in a young man was treated by sponge electrodes over the whole surface. Benefit at once appeared. The itching diminished, and the appearance of the disease improved. In a short time, and by a few applications, the recovery appeared to be complete.

In all these cases the electrolytic effects of the galvanic current unquestionably had much, if not nearly all, to do with the results that were obtained; although the current may, as has been remarked, have other effects which, perhaps, we may never fully understand.

Certain it is that a strong alterative action takes place when either sponge or metallic surfaces—connected either with the positive or negative pole of a galvanic current—are applied to the diseased skin. It may be remarked that some diseases of the skin, as prurigo, may also be treated by the faradic current, which possesses little if any electrolytic power.

It is yet too early to express absolute opinions concerning the electro-therapeutics of dermatology, since the first and so far as we know the only systematic experiments in this department are those here recorded; but it is safe to predict that the future is full of promise, and that electricity, especially the galvanic current, will prove an undoubted adjuvant in the treatment of very many of the obstinate and hitherto called incurable diseases of the skin.

Stricture of the Urethra.—Strictures of the urethra have been treated electrolytically by Mallez and Tripier.[1] They report forty cases. Their method was to introduce to the stricture a metallic bougie, insulated to within a short distance from the extremity. This was connected with the negative pole of a galvanic current of from five to fifteen or twenty elements, while the positive pole, by means of a moist sponge, was applied somewhere on the thigh. The sittings lasted from five to fifteen minutes. Improvement was often immediate, and frequently a bougie would pass easily, which before could not be introduced. The pain of the operation was slight, a little blood appearing on the withdrawal of the bougie. The first urination was easy and painless, but subsequently some pain would be experienced on urination. After five or six days, the cauterized tissue would be thrown off. The cures were permanent. Febrile symptoms occurred only in exceptional instances, and were only light and short. It should be stated, however, that one patient died.

Couriard, of St. Petersburg, has treated twelve cases by this method, in three of which abscesses appeared in the surrounding tissue. In one case the application was continued for forty minutes, with the effect of widening the urethra, but without opening the stricture, so that the bougie could be passed. In ten cases there was more or less improvement. Couriard, though he was not so successful as Mallez and Tripier, yet recommends the treatment for those cases that do not yield to dilatation, and as preferable to urethrotomy.

Other Diseases for which Electrolysis may be used.—Among other conditions for which electrolysis has been used with varying success are: aneurisms, varicose veins, ascites, hydrocele, pleuritic effusions, goitre, urethritis, nævus, rhinitis, and ozæna. The scope of this essay will not permit a detailed consideration of these diseases. Among many decided failures in the treatment of aneurisms and varicose veins by electrolysis, some absolute successes have been reported.

The method of procedure is, to introduce into the diseased vessel one or more needles, connected with one of the poles,

[1] De la guérison durable des rétrécissements de l'urèthre par la galvanocaustique chimique, par F. Mallez et A. Tripier. Paris, 1867. Translated and condensed in this JOURNAL for February, 1868, by Dr. R. D. Nesmith

while the other pole may consist either of a moist sponge, placed on a neighboring part, or of needles penetrating the artery in close proximity to, but not touching, the needle of the pole first introduced. It has been asserted that successful results have been obtained by the action of the negative pole alone. It is claimed by Althaus that at the cathode a slow but firm deposition of fibrine takes place, that gradually but surely strengthens the walls of the aneurism, while at the anode a clot is rapidly formed, but is loosely attached to the coat, and may readily be washed away. An experiment by Drs. Keyes and Beard on the abdominal aorta of a dog did not seem to confirm this statement. While a decided clot was formed at the positive pole, there was no appreciable deposition of fibrine at the negative pole.

Certain forms of serous effusions, especially hydrocele, have been treated with marked success by galvano-puncture. The hydrogen and alkalies that are disengaged at the negative pole exercise both a mechanical and chemical effect, and readily change the secreting function of the serous membrane.

Goitre.—Goitre is occasionally affected most decidedly even when the applications are external. A case of this kind that we have treated at Demilt Dispensary has decreased in size at least one and a half inch under external galvanization frequently repeated.

Adenitis.—Such cases yield with difficulty, require much treatment, and are sometimes as obstinate as malignant tumors.

Rhinitis (*Catarrh of the Nose*).—In this troublesome and persistent affection the effects of local galvanization, both external and internal, are frequently most satisfactory.

Case XI. *Chronic Catarrh of Eight Years' Standing. Complete Recovery under Local Galvanization.*—Miss N., aged thirty, directed to us by Dr. Roosa, had suffered for eight years from an aggravated form of this disease. The usual remedies applied by means of the posterior nasal syringe were not effective in relieving her condition. The use of a mild galvanic current, applied externally and directly to the mucous membrane, repeated four times a week for the space of three months, completely and permanently restored the parts to their normal condition.

The possibility of introducing medicines into the system, through the agency of the galvanic current, is a question that

has excited considerable interest among some of the German investigators. Fabre-Palaprat and Orioli both claim to have practised this method successfully, the former having experimented with the iodide of potassium, and the latter with corrosive sublimate. Recently, Beer, of Vienna, has experimented in introducing iodine into the body, using small glass cups. After filling one of these cups with a solution of iodide of potassium, and the other with glycerine, a piece of dried bladder or chamois-skin is fastened securely over the mouth of each cup to prevent the escape of the liquid. If, now, we connect the glasses containing the iodide of potassium and the glycerine with the negative and positive poles respectively, and bring the coverings of the cups in contact, the glycerine in the positive cup changes to a violet color, indicating the presence of iodine. If moist flesh be placed between the glasses, the same phenomenon is observed. The rapidity with which this effect is produced depends on the thickness of the flesh. The greater the extent of tissue through which the current must pass, the slower does the glycerine change in color. If, instead of a single piece of flesh, a number of thin slices, each covered with glycerine, are placed one upon another, and introduced between the cups, the glycerine in the positive cup will as before become colored, while the glycerine on the flesh exhibits no change. Afterward if the flesh is submitted to the direct action of the current, a dark-blue color appears at the positive pole.

The results obtained by experimenting on the living body were by no means uniform. A patient suffering from ulcer of the knee-joint was subjected to the application, through the leg, of a current with iodine in the circuit for two hours before amputation. No result was obtained.

In another case the result was more satisfactory. The negative glass with a solution of iodide of potassium was placed on one cheek, while a moist sponge connected with the positive pole was applied to the other cheek. After ten minutes, an examination showed that no iodine was in the saliva. In twelve minutes a slight trace was detected. In fifteen minutes an undoubted trace, and in three-quarters of an hour the saliva changed to a blue color when tested with glycerine.

Beer claims to have benefited by this method, and after ordinary galvanization had failed, a number of cases of goitre, muscular contraction, and inflammation of joints.

ART. II.—*Sugar Formation in the Liver.*[1] By J. C. DALTON, M. D., Professor of Physiology in the College of Physicians and Surgeons, New York.

THE present condition of our knowledge on the glycogenic function is as follows: It is universally known that the liver, in healthy animals, when examined within a few minutes after death, contains an appreciable amount of glucose; that this glucose increases in quantity in the liver-tissue after the circulation has ceased; that it will even reappear in the liver, separated from the body, after having been entirely washed out by a continued watery injection of the hepatic vessels; and that it is produced by a catalytic transformation of the amyloid substance, or glycogene, under the influence of an animal ferment. All these facts, due to the remarkable discoveries of Bernard, have been abundantly confirmed by other experimenters, and are established in a manner which leaves no room for question.

It is doubted, however, at the present day, whether glucose really exists in the liver during life, and consequently whether there is any such thing as the glycogenic function, properly speaking. This doubt was first raised in 1858 by Pavy,[2] who asserted that the glucose found in the liver after death was a substance exclusively of *post-mortem* production; that the living organ contained only the amyloid substance, or "hepatine," as he called it, which, however, was transformed into glucose after death with extraordinary rapidity; but that the non-existence of sugar, as a physiological ingredient, could be proved by injecting the liver, immediately after death, with a solution of potash, or by instantly placing the portion cut off in a freezing mixture of ice and salt; either of which processes would arrest the catalytic transformation of the gly-

[1] Read before the New York Academy of Medicine, June 15, 1871.

[2] Proceedings of the Royal Society of London, 1858, ix., p. 300.

cogene. This conclusion was entirely unwarranted by the experiments which Pavy reported, since in no single instance was glucose altogether absent from the liver-tissue in healthy animals treated as above, or from the blood of the right ventricle removed by catheterization during life. It was simply present in very minute quantity, as compared with that found in the organ after a short time had elapsed.

The opinion of Pavy was controverted by Harley[1] in 1860, who operated by killing the animals by section of the medulla oblongata, immediately placing a portion of the liver in the freezing mixture, and afterward slicing it directly into boiling acidulated water. He reported four of these experiments, in all of which the liver-tissue, so treated, gave distinct evidence of sugar. In one of them, the time which elapsed, from the death of the animal to the immersion of the liver-tissue in the freezing mixture, is given as "less than twenty seconds."

Other observers, however, adopted Pavy's view. Meissner[2] in 1862, and Ritter[3] in 1865, repeated the experiments in a slightly modified form, by suddenly slicing out a portion of the liver from the living rabbit, cutting it into small pieces, and immediately dropping it into boiling water. They found that the extract, prepared in this way, gave no reaction when examined by Trommer's test; and concluded accordingly that the liver of the healthy animal during life contained no trace of glucose. Schiff,[4] in 1866, arrived at the same result in dogs, cats, rabbits, and guinea-pigs, by taking out a portion of the liver at the instant of death and cutting it up at once into boiling water.

On the other hand, Eulenberg[5] in 1868, on repeating Ritter's experiments, found in every case traces of sugar, provided the copper test were thoroughly applied; and he concludes that the extract of the liver, prepared by the boiling-water process, will always show evidence of glucose if the test be employed with due care. He thinks, however, that the sugar

[1] Proceedings of the Royal Society of London, x., p. 289.
[2] Zeitschrift für rationelle Medicin, xix., pp. 310–312.
[3] Ibid, xxiv., p. 65.
[4] Journal de l'Anatomie et de la Physiologie, 3me année, No. iv., p. 354.
[5] Journal für praktische Chemie, ciii., p. 108.

so obtained may have been produced in the few instants of time required for cutting up the organ into small pieces; and he accordingly adopted the plan of grinding the liver-substance in a mortar with alcohol and pounded glass. The extracts which he obtained in this way, in six cases, were entirely destitute of sugar when examined by the copper test.

Prof. A. Flint, Jr.,[1] in 1868, experimented upon dogs by cutting out a portion of the liver during life, slicing it into boiling water, and examining the extract by Trommer's and Fehling's tests. In two instances, where the time employed in the operation was respectively 28 seconds and 22 seconds, there was no marked or certain evidence of sugar. In one instance, where the time employed was only 10 seconds, the liver-extract presented no trace of sugar whatever. The blood of the hepatic veins, however, obtained by ligature of the vena cava inferior within a minute after the first operation, showed a well-marked reaction with the copper test. Prof. Flint concludes that the glycogenic matter is really converted into sugar by the liver during life, but is carried away from the organ, as fast as it is formed, by the current of the circulating blood.

Finally, Prof. Lusk,[2] in 1870, operated upon five dogs in order to determine the difference, if any, in the quantity of sugar contained in the blood of the right ventricle, removed by catheterization during life, and that of the jugular vein. He found in every instance, contrary to the results of Pavy, McDonnell, Meissner, and Ritter, that the sugar contained in hepatic blood preponderated very considerably over that in the general circulation; and that the quantity of glucose in the blood of the right side of the heart was from two to four times greater than that found under the same circumstances in the jugular vein.

Two years ago I was desirous of ascertaining the exact time within which glucose would fail to appear in the liver-extract, as examined by the ordinary method. For this purpose I experimented upon dogs by cutting out a portion of the liver in the same manner as Prof. Flint had done, slicing it into boiling water, and making an extract of the coagulated

[1] New York Medical Journal, January, 1869. [2] Ibid., July, 1870.

liver-tissue by rubbing it to a pulp in a mortar, and treating different portions by boiling with pure water, boiling with an excess of sulphate of soda, and lixiviating with cold water through finely-powdered animal charcoal. In one instance the liver-substance, immediately on being removed from the body, was crushed between two slabs of ground glass, rubbed to a pasty mass with animal charcoal, and then lixiviated with cold water. The result was, that, when the preliminary operations were completed in 17 seconds and 22 seconds, the final extract of the liver-tissue gave no reduction by the copper test; but at the end of 50 seconds it gave rather slowly a distinct though not abundant indication of sugar. In one instance, different portions of the same liver were treated by boiling water, and afterward with animal charcoal, at the end of 17 seconds, and at the end of one minute, two, three, four, five, and seven minutes successively. In the first specimen (17 seconds) there was no indication of sugar by Trommer's test; in the second (one minute), the sugar reaction was delicate but distinct. In the remaining five specimens, the reaction, as appreciated by the eye, was constantly more and more marked. The appearance of the different test-tubes, after the completion of the experiment, was very striking. In the first, representing the liver-extract at the end of 17 seconds, the liquid remained perfectly blue and transparent; the remainder all showed a yellow or reddish color from the reduction of the copper, and varied only in the intensity of the hue and the quantity of deposit, which increased exactly in proportion to the time which had elapsed before the end of the operation.

According to these results, therefore, 50 seconds was the shortest time within which the liver-tissue, removed from the living animal, could be found to give indication of the presence of sugar.

These experiments, however, were not fully satisfactory to me, for several reasons. In the first place, when a substance like glucose invariably appears in an animal tissue after death with such rapidity that the interval is to be counted by seconds, it naturally suggests the propriety of extreme caution in adopting the conclusion that it was not there before, at

least in minute quantity. Especially as nearly all observers are agreed that slight disturbances of the circulation or respiration, the struggles of the animal immediately before the operation, or the compressing effect of ligatures, will cause the appearance of glucose in the liver-tissue at the instant of its removal, the necessity of such caution becomes very evident. Schiff states [1] that in various animals, by simply compressing the abdominal aorta for ten minutes, or tying the principal blood-vessels of one limb, he has produced a condition of diabetes, and, on killing the animal, has found sugar present in the liver, though examined with all the requisite precautions. Even the use of ether is interdicted in experiments of this nature, owing to its liability to bring on a saccharine condition of the liver during life. According to the original observations of Bernard, the glucose produced in the liver was supposed to be constantly carried away by the blood of the hepatic veins, to be replaced by a fresh supply of new formation; so that a comparatively large amount of sugar might be supplied by the liver in the course of twenty-four hours, and yet only a small quantity be present in the organ at any one time. We all know that, in point of fact, the amount of sugar in the liver-tissue increases after stoppage of the circulation, just as urea accumulates in the blood after removal of the kidneys, or carbonic acid in the lungs after the stoppage of respiration. The question is, whether this increase of sugar is simply the accumulation of a substance already existing in small quantity, or a matter entirely of *post-mortem* production.

It must be remembered, furthermore, that the chemical tests for glucose, as well as for other substances, have their limits in point of delicacy; and it is possible that they may fail to detect its presence simply on account of its minute quantity. There was a time when it was impossible to detect the presence of urea in healthy blood; and it was only after the requisite improvement in our chemical manipulations that this substance could be distinguished as a normal ingredient of the circulation. This consideration is of some importance in the present connection, because the quantity of liver-tissue

[1] Journal de l'Anatomie et de la Physiologie, 3me année, No. 4, p. 365.

examined in the above experiments is of itself necessarily small. I have found it difficult to cut up in sufficiently thin pieces, and immerse in the boiling water within the requisite time, more than about one hundred and forty grains of the liver-tissue. If a much larger quantity than this be used, it requires more time for completing the operation, and gives rise to the presumption that the sugar afterward found may have been produced by fermentation during the interval which has elapsed.

For these reasons I was anxious, in the first place, to determine the exact limits of sensibility of the various tests for sugar, and the best manner of employing them; and, secondly, to contrive some plan by which a larger quantity of liver-tissue might be used for experiment, without increasing the time consumed in the operation.

The most convenient and generally useful of all the means for detecting sugar is that known as Trommer's test. The imperfection in this test, however, is, that it is indefinite as to quantity. The only rule commonly recognized for its application is to add to the suspected liquid, first, a solution of sulphate of copper, and then a solution of potassa, in sufficient quantity to give to the mixture a clear blue color, and a distinctly alkaline reaction. On boiling, if glucose be present, the blue color changes to a light turbid yellow or an opaque red tint, according to the purity of the liquids and the quantity of copper oxide precipitated.

This is quite sufficient for ordinary purposes. But with liquids containing only a minute quantity of sugar, in a rather dilute form, if we add but very little sulphate of copper, the change of color on boiling may not be sufficiently marked to be satisfactory; and, on the other hand, if we add a quantity of sulphate of copper large enough to make the mixture a decided blue, there is a similar difficulty from another cause. A definite quantity of sugar can only decompose a definite quantity of the copper salt; and consequently the small amount of copper oxide precipitated may be masked by the blue color of that portion of the liquid remaining undecomposed. It is not easy, therefore, by this means, either to detect sugar in

very small amount, or to estimate its absolute quantity in saccharine liquids.

It is claimed, by the author of this test,[1] that it will give a visible precipitate on boiling, in a liquid containing one part of grape-sugar dissolved in 100,000 parts of water. I have not been able to succeed with it, in liquids of so high a degree of dilution, though using every possible care. The most dilute solution in which I have found it yield an appreciable indication is a liquid containing one part of glucose in 10,000 parts of water; and even with this, in order to succeed, we must operate with at least 25 cubic centimetres of the solution, that is, a volume containing $\frac{1}{260}$ of a grain of sugar.

It is easier to detect the presence of sugar in small amount when it is examined in a more concentrated form. According to my experience, the smallest absolute quantity of glucose perceptible by Trommer's test is one cubic centimetre of a watery solution made in the proportion of one part to 2,000, and containing accordingly a little over $\frac{1}{130}$ of a grain of glucose.

Almen's bismuth solution[2] is far less delicate than the copper test. When freshly prepared, the liquid is perfectly clear and colorless. On boiling with a saccharine solution, if glucose be present in decided quantity, it turns to a brownish hue, which, on cooling, rapidly changes to a nearly pure opaque black, very strongly marked when viewed against a white ground. With one cubic centimetre of a solution containing $\frac{1}{40}$ of a grain of glucose, the blackish color of the mixture after cooling is still distinctly perceptible, though it is not opaque; but with $\frac{1}{50}$ of a grain no characteristic reaction takes place.

The hope has sometimes been entertained that the rotation of the polarized ray by saccharine solutions would afford a

[1] Bericht der Königl. Preuss. Akademie der Wissenschaften zu Berlin, 1841, p. 222.

[2] This solution is made as follows: Tartrate of soda and potassa, 160 grains, is dissolved in 4,000 grains of a solution of hydrate of potassa, having the specific gravity 1.33; to this mixture, when warmed, but not boiling, subnitrate of bismuth is added so long as it continues to be dissolved. After cooling, the clear liquor is decanted. It must not be made with the chemically pure potassa, which has been prepared with the aid of alcohol, but with the ordinary hydrate of potassa in sticks.

more delicate test of the presence of sugar than that given by any chemical reaction. This hope, however, has not been realized. In order to produce a decided rotation, the polarized ray must pass through the saccharine solution for a considerable distance, usually about eight inches; and this requires a correspondingly large volume of the liquid under examination.

In Mitscherlich's apparatus, which was intended for medical purposes, and is of comparatively simple construction, the tube is twenty centimetres in length, and requires, for application of the test, 28 cubic centimetres of the saccharine liquid. With a solution of cane-sugar, made in the proportion of 30 parts to 100, the rotation is 36 degrees. With a solution of cane-sugar, one part to 100, it is only from one degree to two and a half degrees. With a solution of glucose (the rotatory power of which is less than that of cane-sugar), if made in the proportion of one per cent., the rotation is from zero to two degrees; that is to say, with 28 cubic centimetres of such a solution, containing 4.33 grains of sugar, the glucose is practically inappreciable.

Soleil's saccharometer is a much more elaborate and delicately-constructed instrument. The tube is eight inches in length, and contains 13.75 cubic centimetres of liquid. The standard solution for this apparatus is a liquid containing 26.05 grammes of pure cane-sugar dissolved in 100 cubic centimetres of water; that is, with the sugar in the proportion by weight of 23.68 parts per hundred. With this solution, the scale of the instrument should mark 100 degrees. In order to bring the index to this point, therefore, we must use 13.75 cubic centimetres of the standard solution, containing 55 grains of cane-sugar.

Soleil's saccharometer was intended for the use of sugar-manufacturers, and is employed for testing the quantity of good sugar in a tolerably dense solution, such as will mark somewhere about thirty degrees on the scale of the instrument. In France it is used, as I am informed by Prof. Chandler, to test the quality of a raw sugar by ascertaining its proportion of good sugar available for refining purposes, and in this way to fix its price for the manufacturer. In this country, at least in some establishments, it is no longer used for that pur-

pose, since the skilled purchaser finds that his inspection of the raw sugar by sight and touch is equally reliable. It is employed mostly for examination of the liquor drained from a crystallizing mass, in order to see how much uncrystallized sugar is still contained in it, and thus to avoid an undue loss in the manufacture.

Notwithstanding the improved construction of this instrument, with saccharine solutions of any grade of strength there is a range of one degree of the scale, in which there is no perceptible difference of color in the polarizing plates. Beside this, on each side of the above range, there is a margin of at least one degree, in which the change of color is exceedingly faint, and requires the closest care and attention to be distinguished.

According to my experience, the weakest solution of cane-sugar which can be distinguished by the polarizing test, with any degree of certainty, is that of one part per thousand; and the necessary volume of such a solution contains one-fifth of a grain of sugar. On the other hand, a solution of glucose, made much weaker than one per cent., cannot be recognized with certainty; and a solution of one part per thousand gives no reliable indication whatever of the presence of glucose.

It is evident, therefore, that the polarizing apparatus cannot be relied on for the detection of glucose in physiological investigations.

By far the most sensitive test for glucose yet discovered is that by Fehling's solution, which is a double tartrate of potash and copper, dissolved in an alkaline liquid, and containing in a given volume a definite quantity of the copper salt.[1] The extreme sensibility of this solution may be well shown by using it in a dilute form. If mingled with forty times its volume of water, and using four cubic centimetres of the mixture, by adding a few drops of a saccharine solution containing

[1] Fehling's solution is made as follows: Pure crystallized sulphate of copper, 500 grains, is dissolved in about 4½ fluidounces of water. Then, neutral tartrate of potassa, 2,000 grains, dissolved in a little water, is mixed with a solution of caustic soda (specific gravity 1.12), 8,750 grains. To this alkaline liquid the copper solution is gradually added, the mixture assuming a clear, deep-blue color. The whole is finally diluted with water to the volume of $934\frac{9}{10}$ cubic centimetres, or f. ℥ 31, f. ʒ 5.

$\frac{1}{160}$ of a grain of glucose, and bringing the whole to ebullition, the reaction which follows is brilliant when viewed against a black ground, and quite perceptible both against white and by transmitted light. If a mixture be made of Fehling's solution, one part, water one thousand parts, and adding $\frac{1}{70}$ of a grain of glucose, there is still a distinct and perfectly characteristic reaction, also visible in all lights, though seen to best advantage against a black ground.

The most effectual way of using this test for very small quantities of glucose is to make the following mixture: Fehling's solution, one part; water, two parts. Of this mixture, five cubic centimetres are placed in a narrow test-tube, rather less than half an inch in diameter, and about three and a half inches long. The tube should be placed in an oblique position, one inch in front of a background of black glass. It is fixed in this position by means of a cork collar, which embraces it at its upper extremity, and which is held by a metallic ring and screw attached to a wooden framework behind.

The dilute copper solution is then raised to the boiling-point by the flame of a spirit-lamp, care being taken not to apply the flame to the sides of the test-tube above the level of the liquid. When the copper solution has thus been brought thoroughly to ebullition, the boiling is allowed to subside, and the saccharine liquid is then immediately added, drop by drop, from another test-tube, in which it has already been kept hot for the purpose.

In this way the hot saccharine liquid, flowing down the inclined sides of the test-tube, mixes gently with the surface layer of the copper solution; and, when reaction takes place, it is indicated by a thin yellow or orange colored ring at the surface of the mixture, which contrasts distinctly with the clear, blue color of the remainder. Boiling must not be continued after the addition of the saccharine liquid; for, in that case, the minute quantity of copper precipitate, which is perfectly distinct so long as it remains on the surface, is broken up and diffused by the mechanical agitation, and becomes quite imperceptible in the excess of the blue liquid.

The principal condition necessary for success, when testing by this method for sugar in minute quantity, is to have both

liquids, at the moment of their admixture, as nearly as possible at the boiling-point without being disturbed by actual ebullition. The apparatus should be illuminated by clear, white daylight, coming from a lateral direction. The black background is the best for showing a very delicate reaction; and in this way we can sometimes see distinctly a copper-precipitate which would be distinguished with difficulty against a white ground, and quite imperceptible by ordinary transmitted light.

In every case there should be two test-tubes, containing equal quantities of the copper solution, placed side by side in a similar position. Both the fluids are to be treated in the same manner, except that the saccharine solution is added only to one of them, the other being used simply for comparison, in order to secure accuracy in the results; by this means we avoid the danger of mistake from spontaneous decomposition of the test-liquid.[1]

If Fehling's test be used in this manner, with a solution of glucose made in the proportion of one part per ten thousand, three drops of the saccharine liquid, added to the hot mixture, cause the appearance of a faint yellowish ring on the surface of the copper solution; but it is very delicate, and requires for its production every possible care in the manipulations.

With a solution of glucose, made in the proportion of one grain to one hundred cubic centimetres, one drop,[2] containing $\frac{1}{1000}$ of a grain of glucose, produces in a few seconds a slight but distinct reaction.

[1] Fehling's solution is apt to become changed in course of time, if freely exposed to the atmosphere, by the conversion of a portion of its tartaric into carbonic acid, after which it will partially precipitate on boiling, though no sugar be present. To guard against this, it is best to keep the solution in a number of small, well-stoppered bottles, each one of which, excepting that in actual use, is quite full of the liquid, and is thus protected from the action of the atmosphere. As soon as the solution in use shows signs of alteration, it is thrown away and a fresh bottle substituted. I have found Fehling's solution, when exposed to the air in warm weather, give indications of spontaneous decomposition at the end of a week; while portions of the same liquid, carefully kept in closed and full bottles, remained entirely unaltered for over three months.

[2] The drops used in these experiments were very nearly $\frac{1}{10}$ of a cubic centimetre each.

If the same saccharine liquid be diluted with an equal volume of water, one drop, containing $\frac{1}{2000}$ of a grain of glucose, also produces a reaction; but it is rather slow in making its appearance, and is on the extreme limit of certainty.

On the other hand, $\frac{1}{3000}$ of a grain of glucose, added in a similar way, causes no recognizable reaction.

That is to say, $\frac{1}{2000}$ of a grain of glucose, *if concentrated in a single drop*, may be detected by Fehling's solution used in the above manner; at the same time, a smaller quantity than $\frac{1}{1000}$ of a grain is hardly available for practical purposes.

It would, however, be very inconvenient to concentrate the fluid extract of an animal tissue to so small a volume as one drop. The better way, on the whole, when we wish simply to determine the presence or absence of glucose in such cases, is to use about one cubic centimetre of the fluid extract, and add to it one drop of the pure Fehling's solution. This method is sufficiently delicate for all requisite examinations.

If one cubic centimetre of water, containing $\frac{1}{100}$ of a grain of glucose, be placed in a narrow test-tube, and one drop of Fehling's solution added, the reaction on boiling is prompt and very strong, easily visible in all lights, and from a considerable distance.

With a similar quantity of water, containing $\frac{1}{1000}$ of a grain of glucose, and treated as above, the reaction is a little tardy in its appearance, but is perfectly distinct in character; most marked when viewed against a black ground. With weaker solutions, the reaction is less distinct, and soon becomes quite imperceptible.

This accordingly is about the limit of the practical operation of Fehling's test. In delicate examinations, the degree of concentration is always of some importance; since the same quantity of glucose, dissolved in double the quantity of water, will often fail to give a reaction, though easily detected in the less dilute form.

For the purpose of reducing the liver-tissue to a state of fine comminution in the shortest possible time, I employed a machine of simple construction, but very effective in its operation, known as the "crimping machine." It consists of two

fluted brass cylinders, placed horizontally side by side, and made to revolve rapidly in opposite directions by means of a crank-handle. Each cylinder is six and a half inches in length and one and a half inch in diameter.

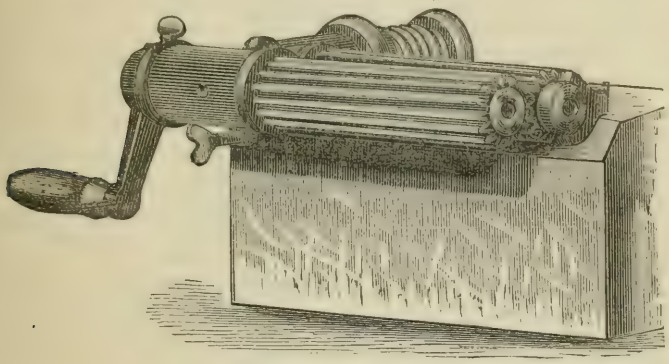


Fig. 1.—Comminuting Machine.

During the revolution of the cylinders, their nearly parallel projections and depressions lock into each other like those of two cog-wheels; their contiguous surfaces, at the point of greatest proximity, being separated by a distance of not more than one-sixteenth of an inch.

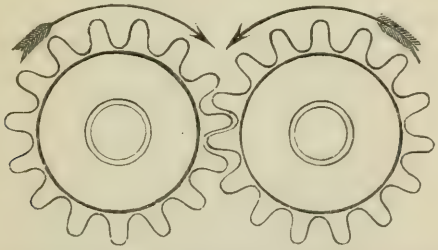


Fig. 2.—Diagram, showing the cylinders of the comminuting machine in profile.

When a portion of liver-substance is passed between the rollers of this machine, it is crushed at once into a state of far finer comminution than could be effected by any cutting process with knife or scissors. The greater part is reduced to the condition of a loose granular *débris*, and the whole of it is so bruised and lacerated that the contact of alcohol or boiling water will instantly affect the entire mass. By this means

from fifteen hundred to two thousand grains of the liver-tissue may easily be separated from the body of the living animal, thoroughly comminuted, and immersed in alcohol or boiling water, within the space of ten seconds.

The mode of operating which I adopted is as follows: The animal is gently but firmly held upon a table by three assistants, care being taken to prevent any struggling or any undue disturbance of the circulation or respiration. The animal being secured in this position, and quiescent, the abdomen is widely opened by a single stroke of a very sharp knife, the liver seized and drawn downward, a portion of it instantly cut off and passed between the rollers of the comminuting machine into a vessel containing ten fluidounces of strong alcohol (specific gravity .820). A fourth assistant meanwhile marks the time consumed in the operation by means of a stop-watch, the second-hand of which is liberated at the instant the portion of liver is cut off, and again stopped when it is comminuted and immersed in the vessel of alcohol.

After remaining for ten minutes in the alcohol, the liver-tissue is pounded and ground to a pulp in a porcelain mortar, the pulp thoroughly mixed with the same alcohol, and the mixture then slowly percolated in a displacement apparatus. The moist liver-tissue remaining in the apparatus is pressed in a linen bag, and the expressed liquid filtered and added to that which has already passed through by percolation.[1]

The alcoholic solution is then mixed with an equal volume of water, the turbid mixture clarified in a displacement apparatus with two ounces of coarsely-powdered animal charcoal, and evaporated to dryness over the water-bath.[2] The dry resi-

[1] In some of the first experiments, more alcohol was added in the percolating apparatus until twenty ounces in all had passed through; but this was subsequently found to be unnecessary, as ten ounces will extract all the glucose contained in the quantity of liver-tissue usually employed, or at least sufficient to give a well-marked sugar reaction. The addition of a larger quantity of alcohol is even detrimental, as it dissolves out more fatty matter, and thus renders the subsequent clarification of the liquid more difficult.

[2] A more direct method would be to evaporate the alcoholic solution to dryness and immediately dissolve the residue in water. But, if treated in this way, the final watery solution is very turbid, and its clarification with

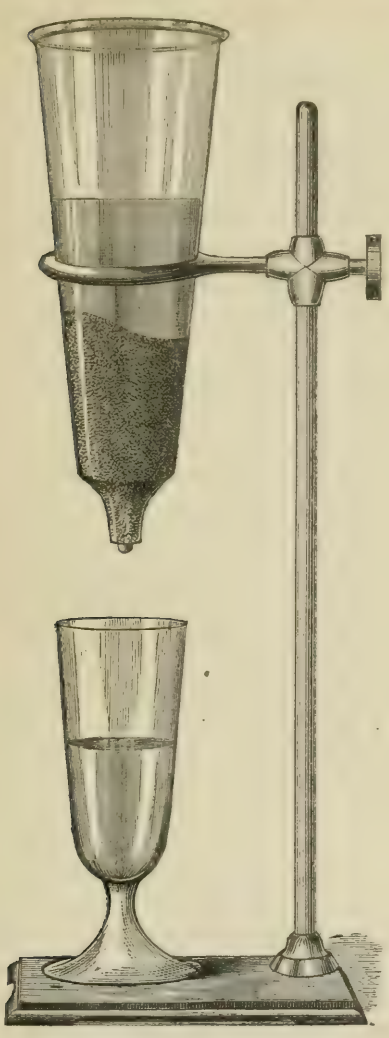


Fig. 3.—Displacement Apparatus.

due is finally dissolved in fifty cubic centimetres of water, again decolorized with one ounce of finely-powdered animal

animal charcoal is a process of extreme difficulty. The operation is greatly facilitated by proceeding as indicated above. The best way is to mix the alcoholic solution directly with the animal charcoal, and afterward to add the water. With careful management, the liquid will then pass through perfectly clear.

charcoal, and filtered. The perfectly clear and colorless watery solution is now examined for sugar by placing one cubic centimetre of the liquid in a narrow test-tube against a black ground, adding one drop of Fehling's solution, and raising the mixture to the boiling-point.

In order to determine the proportion of sugar present in the liver-tissue, one cubic centimetre of Fehling's solution, diluted with water to five times its volume, is placed in a large-sized test-tube against a white ground, and raised to the boiling-point. While the ebullition continues, a measured quantity of the liver-extract is slowly added, drop by drop, until all the copper oxide present has been precipitated, and the remaining liquid when filtered has no longer any blue color. The composition of Fehling's solution is such that, to accomplish this result with one cubic centimetre of the test-liquid, it requires exactly .077 of a grain of glucose, which quantity was accordingly present in the portion of liver-extract employed. From this is calculated the entire amount of glucose in 50 cubic centimetres of the liver-extract, representing a certain quantity of liver-tissue; and thence the proportion of sugar, per thousand parts, in the liver-tissue itself. The quantity of the liver-substance used in each experiment was ascertained by comparing the volume of the comminuted liver-tissue and alcohol with that of another, previously weighed, portion of liver, treated in the same way and mixed with the same quantity of alcohol.

A second method is to employ boiling water, instead of alcohol, for the purpose of preventing *post-mortem* fermentation. The portion of liver cut off, in the manner already described, is passed through the comminuting machine directly into a vessel containing thirty fluidounces of water in active ebullition. With this quantity of water, the temperature of the mixture, on immersing the bruised liver, does not fall at any time below 210° Fahr., and actual ebullition recommences immediately. The boiling is continued for five minutes, after which the liver-tissue is ground in a mortar to a fine pulp and again mixed with the same water. The mixture is next boiled down to about two fluidounces, mixed with five times its volume of alcohol, and filtered; after which the alcoholic solution is treated as in the former process.

In each case it is essential that the final watery solution be absolutely clear and colorless. Otherwise, in testing for small quantities of glucose, it is sometimes difficult to be certain whether a genuine reduction have taken place or not; and, especially in using the volumetric method for quantitative determination, the extraneous matters interfere with the test, and prevent our fixing the precise point at which all the copper of the test-liquid has been reduced.

The following is a list of the experiments mentioned below, with their results:

Experiment.	Time after Feeding.	Time consumed in taking out Liver.	Process of Treatment.	Proportion of Glucose in 1,000 parts of Liver.
No. 1	4 hours.	13 seconds.	Alcohol.	Glucose.
No. 2	4 "	7 "	"	"
No. 3	4 "	10 "	"	"
No. 4	4 "	4 "	"	"
No. 5	8 "	7 "	"	"
No. 6	8 "	6 "	"	"
No. 7	4 "	5 "	Boil'g Water.	"
No. 8	12 "	6 "	"	"
No. 9	12 "	8 "	"	"
No. 10	12 "	5 "	"	"
No. 11	4 "	9 "	Alcohol.	2.093
No. 12	4 "	5 "	"	0.804
No. 13	8 "	7 "	"	1.750
No. 14	8 "	3 "	"	1.510
No. 15	12 "	5 "	"	1.810
No. 16	12 "	5 "	"	4.175
No. 17	12 "	7 "	"	1.830
No. 18	12 "	3 "	"	4.375
No. 19	24 "	5 "	"	3.850
No. 20	24 "	4 "	"	2.675

I have now experimented in this manner upon twenty dogs. In four of the cases the method employed was that by boiling water; in the remaining sixteen cases, that by alcohol. The animals were examined four, eight, twelve and twenty-four hours after feeding; the food consisting always of the fresh or cooked meat of the bullock's heart. The longest time which elapsed from the separation of the liver to its immersion in alcohol or boiling water was 13 seconds; the shortest time was 3 seconds. The average time was $6\frac{1}{4}$ seconds. In every instance, the final watery solution gave a decided and perfectly unmistakable sugar reaction; amply sufficient, in all cases in

which it was attempted, to allow the quantitative determination of the glucose by the volumetric method. The proportion of glucose in one thousand parts of the liver-tissue was thus ascertained in one-half the cases; in the remainder, its presence only was determined, without regard to actual quantity.

In no single instance, in the above experiments, was Fehling's test employed for the detection of sugar' without a similar quantity of the test-liquid being boiled at the same time, to make sure that it was not liable to spontaneous precipitation. The volumetric method was applied with every care, the liver-extract being added slowly, and the fluid after precipitation being nearly always filtered twice, in order to determine the exact point at which its decolorization was complete.

There is no doubt that the quantity of glucose in the liver increases immediately after death; although, according to my experiments, this increase is not always so rapid as might be inferred from the general statements of some writers. In the following cases its proportion was determined at various periods after death:

Proportion of Glucose in the Liver,

	at the end of	per 1,000 parts.
Experiment No. 15.	5 seconds	1.810
	15 minutes	6.792
	1 hour	10.260
Experiment No. 19.	5 seconds	3.850
	6 hours	11.458
Experiment No. 20.	4 seconds	2.675
	1 hour	11.888
	4 hours	13.361
	12 hours	15.351

It might perhaps be doubted whether the glucose, thus existing in the liver at the moment of death, may not be due to the arterial blood with which the organ is supplied, rather than an ingredient belonging to the hepatic tissue. This, however, is not the case. The question may be settled by examining, at the same time with the liver or immediately afterward, some other abdominal organ equally well supplied with arterial blood. The spleen was selected for this purpose,

and in three cases was taken out within ten minutes after the excision of the liver and treated in precisely the same manner, by the alcohol process, with the following result:

Proportion of Glucose per 1,000 *parts*

	at the end of		in the		
Experiment No. 14.	3 seconds	.	Liver	.	1.510
	10 minutes	.	Spleen	.	0
Experiment No. 19.	5 seconds	.	Liver	.	3.850
	10 minutes	.	Spleen	.	0
Experiment No. 20.	4 seconds	.	Liver	.	2.675
	10 minutes	.	Spleen	.	0

In the last-mentioned experiments, the watery extract of the spleen, treated in the same way with that of the liver, gave no reduction whatever on boiling with Fehling's solution; but in each case, after being concentrated over the water-bath to one-tenth of its volume, it yielded an uncertain sugar reaction, entirely too small for quantitative determination.

From these results I think we may legitimately draw the following conclusions:

1. Sugar exists in the liver at the earliest period at which it is possible to examine the organ after its separation from the body of the living animal.

2. The average quantity of sugar existing in the liver at this time is at least two and a half parts per thousand.

3. The liver-sugar thus found does not belong to the arterial blood with which the organ is supplied, but is a normal ingredient of the hepatic tissue.

I am much indebted for valuable aid, during the course of the foregoing investigations, to Prof. Chandler of Columbia College, and to my assistants, Dr. Geo. B. Fowler, Dr. John G. Curtis, Mr. Frederick W. Chapin, and Mr. George Hart.

ART. III.—*On the Etiology of Hereditary Syphilis.* By FREDERICK R. STURGIS, M. D., Clinical Assistant Manhattan Eye and Ear Hospital, New York.

THE idea has for a long time obtained in works on venereal, that a father may procreate a child which shall show evidences of syphilis without the mother being infected at all; in other words, that so-called syphilitic semen has the power to transmit the disease to the ovum alone, and thence to the child, while the mother who furnishes the ovum, and of whom the fœtus is a most intimate part, whose blood circulates through and nourishes this diseased product, escapes. Syphilis is essentially a poisoning of the blood in which the virus is supposed to be carried throughout the system, and by which it is transmissible.

Now, how the blood of the fœtus can be charged with this active transmissible poison, can circulate through the mother's arterial system without producing the disease in her, appears incomprehensible. Either our belief that the virus of syphilis is contained in the blood is incorrect, that Pellizaris's experiments of transmission of the disease by the blood are false, or else we must consider that the reported cases of healthy mothers giving birth to syphilitic children are untrue.

To look at it in another light: it is a pure assumption on our part to say that the semen of a person afflicted with syphilis must be diseased, and capable of transmitting the infection. The only ground upon which it rests is that syphilitic fathers have syphilitic children. If the semen is diseased, of course the urine, the sweat, the saliva, the tears, the milk, in a word, all the secretions and excretions of a syphilitic person must likewise be syphilitic and capable of transmitting the disease. I scarcely think there is any medical man who would advance such a statement, or who would find any proof to support it. Since the day when Cardinal Wolsey was accused of attempting to transmit syphilis to his royal master by whispering in his ear, such cases have been looked upon as idle fables, and have never commanded the serious attention of the profession.

Any one looking over the reported cases, where, of the two parents only the father is diseased, will be struck with the meagre details of the mother's history; she is often barely

noticed. Where she receives something more than a mere mention of her existence, it is usually in such language as, the mother is and has been perfectly healthy, or, the mother has never presented any symptoms of the disease; and sometimes she is examined, when the report is, the mother was examined and nothing suspicious was found.

Nor do I consider objections to such bare and unsatisfactory histories as these mere cavil. When it is considered how imprudent it often is to arouse the mother's suspicions by any questions about herself; how reticent women are upon such matters, even when they know about them; how far from uncommon it is for the earlier symptoms to be entirely overlooked, or, if noticed, to be ascribed to some other cause, the difficulty of obtaining a correct judgment in these instances can be better appreciated. For the most part the cases of infection by the father alone are derived from the older writers, and, becoming stock-cases, are copied *ad infinitum*, by every one who writes upon the subject, without the slightest question of their truth being raised. Diday, one of the advocates of this theory, when writing upon the subject in his work on Infantile Syphilis (Sydenham Society Publications, p. 17), gives but one case of his own observing, and curiously enough, although the father had undoubted syphilitic symptoms both before and after his wife's impregnation, and ought therefore to have had a syphilitic child, it was born and continued to be healthy. At the time of reporting the case the child was two years old.

Besides the causes already mentioned, which sometimes render a correct solution of the problem impossible, there is one which has not been mentioned. It sometimes occurs that, in those cases where the mother is examined, she is found free from all symptoms. Is it therefore proper to conclude that she is to be exempted from having any share in the disease of the child? No, and for this reason: Between the disappearance of one set of symptoms and the appearance of the next, there is an interval of freedom from all signs of the disease, the so-called period of incubation. During this period it is often impossible to tell by an examination whether the patient has had syphilis or not. It may be objected that the indura-

tion left after the chancre, and of the inguinal glands, or the presence of cicatrices, would give a clew to the truth when all else fails. Undoubtedly glandular induration and that of the chancre, when present, are valuable diagnostic signs, but, unluckily for this view of the case, the former is not indelible, on the contrary, is frequently evanescent, and the latter in women is proverbially hard to find; in fact, is sometimes impossible to discover.[1]

Then, again, all chancres do not have the ligneous hardness usually associated with them; they may be "parcheminé," and at the date of the examination, which is usually made some time after the inception of the disease, all signs of the induration have disappeared. Cicatrices do not occur until during the later stages of the disease, and a person may have had the earlier secondary manifestations, which have disappeared without leaving a trace of their presence. Given a case under such circumstances, how is an examination alone to enable us to decide whether the patient has or has not syphilis? Viewed in this manner, Ricord's case, which he describes in the fourteenth chapter of his "Lettres sur la Syphilis," is capable of a different interpretation from that which this eminent surgeon gives it. It is copied here *in extenso*, because it is one so often cited in support of the theory of paternal transmission, and the clearness and accuracy with which it is related render it less liable to the objection of carelessness made to the majority of the cases reported:

Case I.—A young woman, accompanied by her husband, older than herself, consulted me with regard to her child, which had been put out to nurse. The child was infected with constitutional syphilis, which the mother accused the nurse of having given it. The child was almost completely covered with a moist squamous syphilide; the pourtour of the anus and of the lips was the seat of ulcerating mucous patches. The child was six months old; the nurse's statement was, that the first symptoms showed themselves at the age of six weeks.

The mother and the husband both declared to me that they had never had the disease, and the most careful examination failed to show any thing either present or past. The nurse, also, examined with the greatest care,

[1] In this connection consult De l'Induration chancreuse chez la Femme, par Alf. Fournier; Annales de Dermatologie et de Syphiligraphie, t. 2ième, p. 46.

seemed to me to be perfectly healthy. Her child, which she was suckling at the same time as the diseased nursling, was perfectly well.

I was exceedingly puzzled in my attempts to discover the origin of this child's syphilis, when, the next day, I was consulted by a young cavalry-officer for a plantar and palmar psoriasis. He questioned me, with the most touching solicitude, with regard to the illness of the child which had been brought to me the day before, and he confided to me his share in the affair; but, being ignorant of the laws of inheritance, he was surprised at the child being diseased, especially as he said he thought himself cured, and had not a single symptom of the disease when he had connection with the mother, who entirely escaped infection.

In this case there are four parties—father, mother, nurse, and cavalry-officer. Of these only one, the latter, shows symptoms of the disease. The father and nurse can be excluded; the former, because it makes no sort of difference whether he did or did not have syphilis, the latter because of her child's good health; had she been syphilitic, it would have been so also. Two are left, mother and cavalry-officer. He undoubtedly is one source of the child's disease, and the question is, was he the only one. His symptoms are syphilitic psoriasis; how far back do his contagious symptoms date? This eruption is generally a late form of the disease, but may occur chronologically anywhere from six or eight weeks to two years and more after the primary lesion.[1] The child is six months old, which, added to the nine months it was *in utero*, makes fifteen months. Fifteen months back the officer confesses to have had syphilis, and is it so improbable to suppose that, notwithstanding his belief that he was well when he had connection, he was mistaken, and really did have contagious symptoms at the time he had his intercourse with the mother? Is it so improbable that the mother was diseased, and may have known nothing about it? I believe not, and in proof of my assertion I refer the reader to two cases mentioned in Bumstead's work (pp. 478, 479), where the patients had in-

[1] Consult *Cullerier*, Atlas of Venereal Diseases, translation by Bumstead, p. 284; *Bassereau*, Traité des Affections de la Peau symptomatiques de la Syphilis, p. 498; *Bumstead*, Pathology and Treatment of Venereal Diseases, pp. 406, 408, 546; *Reder*, Pathologie und Therapie der venerischen Krankheiten, p. 246; *Müller*, Compendium der venerischen Krankheiten, p. 233.

contestable signs of syphilis, and were yet totally ignorant of the fact. At the time she was examined by Ricord she was either well, or, what is not unlikely, in the period of transition, when she would not probably have had any symptoms indicative of the disease, but which she might have shown had Ricord had an opportunity of examining more than once. I am well aware how readily this explanation might be looked upon as more ingenious than correct, but, when viewed by the results of other cases which I shall quote, it will not, I trust, appear so far fetched. Since I wrote the foregoing paragraph, I chanced, while looking over Zeissl's work, "Lehrbuch der constitutionellen Syphilis," p. 317, to find the following statement, which to a certain extent is confirmatory of my view: "I have noticed as a rule that women, whose husbands are suffering from so-called latent syphilis, not only quickly fade and lose their former blooming appearance, even if they have never been pregnant, nor had any miscarriages, but that sooner or later in such leucæmic women glandular tumors and ostroscopic pains make their appearance together with nodes upon the sternum, cranium, tibia, etc., and that these symptoms disappear under anti-syphilitic treatment only. *I recall to mind a case where the man affected with psoriasis palmaris was the father of two syphilitic children who died soon after birth. The mother remained apparently healthy until after the second confinement, when an undoubted psoriasis palmaris showed itself in her.*"

Cullerier, in 1854, in a paper read before the *Société de Chirurgie de Paris*, advanced the statement that the influence of the father was *nil* in the contamination of the fœtus by hereditary syphilis; that it depended upon the mother; so long as she remained free from disease, the child was safe. In the introduction to his work, "Précis iconographique des Maladies vénériennes" he says: "I have since met with new facts which corroborate those I have already observed. I have under my care seven children affected with hereditary syphilis. In six, I have verified the disease in the mother. In the other, the father and mother both denied any previous disease, so that one cannot be accused of it more than the other. I have known eight men suffering from secondary syphilis impregnate

their wives, and their children are exempt." He gives two cases in full, which occurred in his practice, and which first induced him to differ from the generally-received opinions of the day.

Case II.—An officer in the French Army contracted an indurated chancre, followed by a squamous syphilide, mucous patches of the anus, ulcerations of the mouth, impetigo of the scalp, alopecia, and induration of the cervical ganglia. After following treatment for fifteen days, he was salivated. In spite of all this, he married, and shortly after impregnated his wife. She escaped infection, and the child also. At the time the case was reported, the son was eighteen years of age, and had never shown the slightest symptom of the disease (*op. cit.*, p. 87).

Case III.—Indurated chancre six months before marriage; subsequent symptoms: roseola, cervical adenitis, and trouble in the throat. During this condition of the husband the wife became pregnant. She escaped infection. The child was born healthy, and has remained so for fifteen years (*op. cit.*, p. 88).

These cases of Cullerier were followed by observations bearing upon this subject published by M. Notta in 1860, and by M. Charrier in 1862. The conclusions these gentlemen arrived at were similar to those of Cullerier, viz., that, provided the mother escaped infection, the children were safe. I append their cases in a tabular form:

SYNOPSIS OF M. NOTTA'S CASES OF INHERITED SYPHILIS.—ARCHIVES GÉN. DE MÉDECINE, MARCH, 1860.

Cases.	Condition of Father.	Condition of Mother.	No. of Children or Pregnancies	Condition & Ages.
Case 1.	Indurated chancre, etc. At time of marriage, he had an exostosis of the ulna, and a syphilide on the outer surface of the forearm. Followed four years afterward by orchitis of both testes; his syphilide on the arm still continuing.	Healthy.	2.	Healthy. 7½ and 6½ years.
Case 2.	Indurated chancre, mucous patches, alopecia, etc. One year after, all the symptoms having disappeared, he married. Two months after marriage, mucous patches returned on the tongue, which lasted one and a half year. Free from symptoms he impregnated his wife, when a month after he presented himself with palmar psoriasis.	Healthy.	1.	Healthy. 22 months.
Case 3.	Indurated chancre, etc. Three months after marriage, he presented mucous patches of the scrotum, in the throat, and round the anus. At this time his wife became pregnant. The mucous patches continued thro' this and at the time of his wife's second pregnancy.	Healthy.	2.	Healthy. 3 and 2 years.
Case 4.	Indurated chancre, mucous patches about the scrotum and anus, and articular pains. At time of marriage, free from symptoms. Two months after marriage, squamous eruption on scrotum, which continued during his wife's pregnancy.	Healthy.	1.	Healthy. 7 months.
Case 5.	Indurated chancre, etc. Three years after marriage ulcerating gummata of the arm.	Healthy.	6.	Healthy. Ages of first two only given, 12 and 11 years.
Case 6.	Phagedenic chancre, followed two years later by orchitis and papular eruption. Between the chancre and his subsequent symptoms had noticed nothing suspicious. The orchitis and eruption came on at the time of his wife's confinement.	Healthy.	1.	Healthy. 15½ years.
Case 7.	Indurated chancre, followed by mucous patches in the throat, papular eruption of the scalp, cervical adenitis. Two years later, cerebral symptoms indicative of tumor of brain, incomplete hemiplegia, head-	Healthy.	1.	Healthy. 15 months.

SYNOPSIS OF M. NOTTA'S CASES CONTINUED.

Cases.	Condition of Father.	Condition of Mother.	No. of Children or Pregnancies	Condition & Ages.
	aches, and nocturnal pains. Recovery under use of iodide of potassium. He then married.			
Case 8.	Indurated chancre, mucous patches about the anus, nocturnal pains, alopecia, and engorgement of cervical glands. Three years after recovery he married.	Healthy.	1.	Healthy. 2 years.
Case 9.	Father had syphilitic manifestations anterior to the birth of the child. At time of the report a syphilitic eruption.	At time of conception had mucous patches of the throat, alopecia, nocturnal pains, and headache. Three years elapsed between the two pregnancies, during which time neither showed any signs of syphilis.	2.	The first child, when six months old, mucous tubercles about the anus and an eruption over body. The second child, eruption on body & mucous patches about scrotum.
Case 10.	Mucous patches in the mouth, alopecia, and a syphilide of the scalp. After recovery from these symptoms he married. Three months after, he had a syphilide which covered his penis and testicles. Three years later cerebral symptoms.	Four months after marriage, mucous patches of the vulva, alopecia, and headache.	1.	Two months after birth cachexia, blotches, and ulcers over the body.
Case 11.	Indurated chancer three weeks before marriage.	Indurated chancres on the labia minora, seen five months later, with mucous patches about the anus and vulva.	1.	Died at the sixth month of intra-uterine life.

Here, again, are found precisely the same results as in M. Cullerier's two cases, viz., the child inherits the disease only when the mother has syphilis; provided she has escaped infection, it makes no difference whether the father has had it or not. In this series are four sets of cases:

1. Where the father at the time of conception has syphilitic symptoms, or where the diathesis is present, but the mother is free from disease.

2. Where the father shows no symptoms, nor is the diathesis apparently present, although he has had an anterior syphilis. The mother does not suffer from the disease.

3. Where the father has had syphilis, but shows nothing of the disease. The mother has had an anterior syphilis; and,

4. Where both are syphilitic at the time of conception.

Among these four sets of cases, eighteen children are born, fourteen for the first, and four for the last two sets. Of the first two sets, not one child is diseased; of the last two, all. In

other words, when the mother escapes infection, the children are healthy, but, where she is syphilitic, the children are so also.

SYNOPSIS OF M. CHARRIER'S CASES.—ARCHIVES GÉN. DE MÉDECINE, SEPTEMBER, 1862.

Cases.	Condition of Father.	Condition of Mother.	No. of Children or Pregnancies	Condition of Children and Ages.
Case 1.	Primary lesion one month before marriage, followed by roseola. Wife became pregnant during his treatment.	Healthy.	3.	Healthy. 6, 4, 2½ years.
Case 2.	Palmar syphilide.	Mucous patches during pregnancy.	3.	One child died one month after birth with syphilitic symptoms. Two miscarriages, one at four months, the other at seven. The latter was born with mucous patches about the anus.
Case 3.	Indurated chancre, roseola. Ecthyma at time of wife's pregnancy.	Healthy.	1.	Healthy. 4 years.
Case 4.	Rupia and osteoscopic pains. At time of wife's pregnancy, node on clavicle and nocturnal cephalalgia.	Healthy.	1.	Healthy. 8 months.
Case 5.	Healthy.	Roseola and mucous patches four months before marriage. At time of marriage, impetigo of the scalp. Pregnancy one month after marriage.	2.	Abortion at third month. Children covered with copper-colored spots.
Case 6.	Mucous patches about the anus, three months before marriage. At time of marriage, specific ulcerations on the tonsils.	Healthy.	1.	Healthy. Age not given.
Case 7.	Before getting syphilis, he had two healthy children. Chancre (indurated), followed by impetigo of the scalp and cervical adenitis. One year later, ecthyma, and one year later still he had exostoses.	Healthy.	3.	Healthy. 4, 3, and 2 years.

In the second case on the list is a singular fact, which could not well be expressed in the tabular form, but which is none the less worthy of mention. Here the man's wife contracted the disease, but his mistress (for he had one) did not. Within a fortnight of the time that the wife was delivered of the seven-months' fœtus with the anal mucous patches, the mistress had a child, which up to the age of three years had never shown any symptom. Objection may be made to this child being by some other man, but M. Charrier answers that in

this manner: "Cet enfant ressemble en tout point à son père, et qu'il a comme lui *une conformation toute particulière des pouces*, que les *enfants légitimes* avaient également presentés."

Here are eight observations, in seven of which the father is syphilitic. In six of these eight, the mothers do not contract the disease; in two they have syphilis. What do we find? Wherever the mother is healthy, the children are so also; wherever the mother is diseased, the children are likewise diseased. And, in one case, this is strikingly exemplified: the husband communicates the disease to his wife, and all the children are syphilitic; but his mistress, who escapes infection, presents him with a perfectly healthy boy.

To close this paper, I quote one more case, which is particularly interesting and instructive. It is reported by Dr. Van Buren, of New York, in the first volume of the *American Journal of Syphilography and Dermatology*, and clearly demonstrates the fact which this paper seeks to show. The early part of the history, so far as syphilis is concerned, is not given, inasmuch as the patient declined an examination, but there is every probability that he had the disease at the time he married. Three years after his marriage (1861), he had "*retinitis syphilitica*," complicated by "*amblyopia* potatorum." Eight years after his last symptoms (in 1869), and eleven after his marriage, he came under Dr. Van Buren's care, with the following symptoms: "Irregularly nodulated and tender shins, superficial ulcers at the angles of the mouth, a yellowish patch on one tonsil, and a circular scaly spot as large as a sixpence on one of his palms." The mother was at the time of her marriage perfectly healthy, and had never been married before. In 1860, two years after her marriage, she also came under Dr. Van Buren's care, and the following is her record: "From the enjoyment of brilliant health at the time of her marriage, she had become gradually pale, weak, and emaciated, without obvious cause. She had nursed both of her children. I was unable to make out any symptoms of secondary syphilis, save a characteristic ulcer upon the side of the tongue, of at least six months' duration (query, was the ulcer or the syphilis of six months' duration?). She had also a gummy tumor the size of a hickory-nut, in the left *la-*

bium majus." She ultimately seems to have recovered, under treatment, from the syphilis, to die in 1867 of peritonitis due to an ovarian enlargement.

This couple have four children, first one born May, 1859, healthy at birth and remained so when last seen, seven years after. Second child born June, 1860, with defective development of brain and spinal cord. This child, as far as I can learn, never manifested any of the ordinary evidences of congenital syphilis. It showed a great deal of tenacity of life, although idiotic and paraplegic, and died at the age of five, from the consequence of whooping-cough. The third child was born January, 1862. Dr. Van Buren received from the family physician, April 9, 1862, a letter as follows: "The child appeared quite healthy at birth and continued so until three weeks ago (i. e., two months after birth), when an eruption made its appearance (complicated with excoriations around the mouth and nose), which gradually invaded the whole body, and was in the writer's opinion 'decidedly syphilitic.' There are at present no marks of morbid action in the mother, but she has resumed the use of the corrosive sublimate, and is nursing the child." The boy had subsequently periostitis of the tibia and ulna, and in 1869, at the period of his second dentition, he had "unmistakable evidences of the disease upon his incisor teeth, the development of the enamel quite imperfect—in fact, what I call syphylitic teeth."

The fourth and last child was born October, 1869. The child is in "excellent health, having shown no evidences whatever of disease."

Here is the case of a healthy woman, free from disease, married to a man who, if he does not present evidences of syphilis, is under the influence of the diathesis at the time of his marriage. They have four children; are they all diseased? According to the generally-received opinion, they should have been. Throwing aside all preconceived ideas, what are the facts of the case? The first two children are free from syphilis, for, in the case of the second, idiocy and paraplegia, in the absence of other symptoms, are not sufficient to establish a diagnosis due to hereditary syphilis, merely because the father is syphilitic. The third child is beyond doubt diseased, and

what is the condition of the parents? Two years before this child was born the mother had a gummy tumor and an ulcer on the tongue. One year before the child's birth the father had "retinitis syphilitica and amblyopia potatorum." Both diseased; when did the mother's trouble begin? Dr. Van Buren thinks during the first pregnancy and lactation. But if so, unless acquired at a late stage of the pregnancy, how is the first child so healthy, and why does not the second one show syphilitic symptoms? They do not, however. It is the third one only which shows evidences of hereditary taint. The infection probably occurred somewhere between the second and third pregnancies. Four months after the birth of the second child the mother shows the symptoms detailed above, and "which were at least of six months' duration." From that it would seem that the mother became diseased at the very last part of the second pregnancy. If this view of the case be the correct one, we see these two facts: 1. That a mother begets non-syphilitic children so long as she is not infected, even though the father is syphilitic; and, 2. The moment she is diseased, the children are inevitably so. One other and still stronger fact: when the mother recovered, the next child was healthy, although the father was still under the influence of the diathesis; for two years after the child's birth he came under observation with marked symptoms of syphilis.

In the next paper I shall examine cases where the paternal influence is admitted; not all, for that would occupy too much time and space with no good result, but the most prominent ones, and show wherein the defects lie, so far as their scientific value is concerned. My object in writing these articles is to call attention to the fact of how little is known of the etiology of hereditary syphilis, and how needful it is, with our advanced knowledge upon the subject, to revise our former beliefs. To do this effectually, we must give up our blind reliance upon old authorities when they clash with newly-observed facts, and examine the question for ourselves, for in medicine, as in the other sciences, skepticism is the first step toward sound knowledge.

ART. IV.—*On one of the Causes of Death from Chloroform.*[1]
By ANDREW H. SMITH, M. D., of New York.

MR. PRESIDENT: I will not absorb the time of the Society in an elaborate review of the different theories which have been advanced as to the modes in which chloroform produces death. The subject is a hackneyed one, and is doubtless familiar to all present. The facts involved are stated with great clearness and precision by Dr. Squibb, in a paper read before the State Medical Society at its last session. He states that the narcotism of chloroform may be symmetrical or asymmetrical. If symmetrical, it invades the different systems and organs in a regularly progressive order, the heart and the respiratory muscles resisting its influence the longest. But, if carried too far, even these may succumb, and death is the result. On the other hand, when asymmetrical, some organs are affected to a disproportionate degree, and, if they be organs whose function is immediately necessary to life, as the respiratory muscles or the heart, a fatal result may take place before general narcotism is developed.

It is generally stated that in much the larger proportion of cases death results from cardiac syncope. Dr. Snow considers this to have been the case in all but six of fifty cases quoted by him in which the symptoms were more or less fully described. In nearly every instance, however, the only evidence that the heart had ceased to act was, that the pulse could not be felt at the wrist. But this test cannot be otherwise than fallacious, for it is a matter of daily observation that the heart may continue its action for some time after the radial pulse can no longer be perceived.

In two cases in which death from chloroform occurred under my observation, respiration ceased suddenly before unconsciousness had taken place, the action of the heart continuing for a considerable time. In several instances I have unintentionally destroyed animals with chloroform while practising vivisections, and in every case the pulsations of the heart continued after respiration had ceased. Dr. Snow seems to have

[1] Read before the New York Medical Journal Association, March 24, 1871.

observed this more frequently in animals than he is disposed to admit its occurrence in the human subject, but the numerous instances in which impending death is averted by artificial respiration seem to point to the breathing as the function first impaired in a considerable proportion of cases in man as well as in the lower animals.

But the object of this paper is to call attention to a mode of death which differs both from cardiac syncope and from paralysis of the respiratory muscles. I refer to *direct local anæsthesia of the lungs.*

It is well known that the movements of respiration, although to some extent under the influence of the will, are chiefly reflex in their character. This is shown by the fact that they continue during the unconsciousness of sleep, of anæsthesia, or of coma, and that beyond a certain point they are not under the control of the individual. Now, every reflex movement requires as its antecedent an impression upon a sensitive nerve. In this case the impression is chiefly upon the pulmonary nerves, and results from an excess of carbonic acid and a deficiency of oxygen in the blood. That the origin of the movements is peripheral and not central is shown by the fact that section of the pneumogastrics greatly reduces the frequency of the respiration, which would not be the case if the unaërated blood acted directly upon the respiratory centres as strychnia does upon the cord.

The character of the irritation which excites the movements of respiration may be appreciated by simply holding the breath. It is a sensation entirely peculiar, and is Nature's demand for air just as hunger is Nature's demand for food. By the French it is called the *besoin de respirer*, the necessity for breathing.

Now, in a certain proportion of cases, I believe that chloroform destroys life by its local anæsthetic effect upon the lung, rendering it insensible to the presence of carbonic acid, and thus removing the stimulus to respiration. The vapor of chloroform is a decided local anæsthetic, especially when applied to a mucous surface. It is well known that the senses of taste and smell are abolished at a very early stage of chloroform narcosis, and this effect is universally attributed to the local action of the chloroform. Dr. Squibb, in his paper al-

ready referred to, calls attention to this local anæsthetic effect upon the larynx as explaining the fact that the glottis does not close to prevent the passage of anæsthetic vapors as it does in the case of other irritating substances. Precisely this effect, extended to a large portion of the lung, may act, as I conceive, to prevent entirely the impression upon the nerves which is required to excite respiratory movements.

An analogous result is observed in opium narcosis, in which the sensibility of the lungs becomes more and more blunted, requiring a progressively-increasing accumulation of carbonic acid to cause the necessary stimulus to the respiratory act. Hence, we find the respiration becoming slower and slower, until it finally ceases altogether. The only difference is that, in the case of opium, this result is brought about secondarily through the medium of the circulation, and the lungs simply share in the general anæsthesia, while with chloroform we have, in addition, the local effect from the direct topical action of the vapor.

It is to be borne in mind that the lungs partake of the general anæsthetic effect of the chloroform to an exceptional extent, as the blood with which they are supplied is charged more highly with the anæsthetic than the blood in other portions of the body. Now, the experiments of M. Caze, of Strasbourg, show that anæsthetics act rather upon the peripheral nerves than upon the nerve-centres. He states that a limb can be protected against the influence of chloroform inhalation by merely compressing the main artery that supplies it. Immediately on removing the pressure and restoring the circulation, the limb becomes insensible.[1] If this be true, the lungs are evidently exposed to a disproportionate action, since their nerves are bathed by blood containing a much larger proportion of the anæsthetic than is contained in the general circulation. If now we add to this the effect which chloroform-vapor exerts upon the nerves by its direct local action independently of the circulation, the surprise is that the perfect insensibility is not the rule rather than the exception.

It occasionally happens in opium narcosis that the anæsthetic effect upon the lungs is developed out of proportion to

[1] Stillé, Therapeutics and Materia Medica, vol. ii., p. 111

the narcotic action upon the sensorium, so that the respiration will become alarmingly slow while the patient is still sufficiently conscious to quicken his breathing at the command of the physician. A case of this kind is described by Dr. J. C. Smith, in the *Medical Record* for January 2d: "Some five years ago I saw a case in which this result occurred from the use of chloroform. I was giving the chloroform very slowly, the object being merely to allay pain, when suddenly the patient ceased to breathe, without having been at any time wholly unconscious. Very much alarmed, I was about to begin artificial respiration when I observed that the eyelids were trembling, and that the general expression of the countenance was not that of profound unconsciousness. Laying my hand roughly upon the shoulder of the patient, I said in a sharp, quick tone, '*Breathe*,' and to my great relief she responded with a full inspiration. But there seemed to be no disposition to repeat the effort voluntarily, and for several minutes each respiratory act was performed only at my command. I waited several times, as long as I dared to, to see whether she would not breathe spontaneously, and carried the experiment to the limit of what seemed to me justifiable. I do not assert that this would have proved a fatal case if left to itself, still less if the usual restorative treatment had been resorted to; on the contrary, I think it probable that in this case, when the accumulation of carbonic acid in the blood had reached a certain point, the anæsthesia of the lung would have been overcome, and respiration would have been resumed. Still, the case differed so decidedly from those of momentary suspension of breathing which we often see even when ether is employed, that I think the experiment would have been full of danger."

I may add that about two years ago I endeavored to determine by experiment what would be the effect of producing within the lungs the peculiar partial anæsthesia which results from the application of tincture of aconite to the surface. With this view I caused an animal to inhale for a moment the tincture of aconite in the form of spray, using Richardson's nebulizer. The respiration became at once very much embarrassed, and death resulted after a few hours. But I was unable to separate to my own satisfaction the local action upon the lungs

from the general toxic effect of the drug, which may have been absorbed through the pulmonary membrane in quantity sufficient to produce death.

Death from pulmonary anæsthesia would be more likely to result from a large amount of vapor being inhaled at a single inspiration. This may readily occur when the chloroform is poured upon a towel folded in a number of thicknesses, and already warmed by the breath of the patient and by contact with the face. If the towel is formed into a cone, the cone may well be filled with almost pure chloroform vapor. When this is suddenly applied to the face of the patient, the first inspiration must include an undue proportion of the anæsthetic. Hence, an inhaler like that of Dr. Sayre, in which the chloroform is vaporized by the current of air drawn through it, would afford much greater safety.

Clinical Records from Private and Hospital Practice.

I.—*Three Cases of Ruptured Perinæum; Operation; Cure.* By Prof. Alexander J. C. Skene, M. D.; reported by Henry N. Read, M. D., House-Surgeon, Long Island College Hospital.

Case I.—M. H., aged 26, U. S., admitted to Long Island College Hospital October 13, 1870. Patient has been married four years; has one child, three years old; has been a healthy woman all her life; nothing unusual occurred during pregnancy; her labor was rapid, commenced at 2 P. M., and was finished at 6 P. M. The case was terminated by the use of forceps, and, when finished, the perinæum was found ruptured. Since that time (three years ago), she has been constantly subjected to the numerous train of evils which accompany all such cases. She has been unable, from the nature of the difficulty, to go into society; her sufferings have been protracted and severe, and have reduced her much in flesh and strength. For more than two years she has also had a most troublesome diarrhœa, and, having no control over the lower bowel, has often ten or a dozen discharges per day. An examination being made, the laceration was found to extend from the inferior commissure through the sphincter ani and vagino-rectal septum, so that a finger in the rectum and one in the opening above were separated only by the coats of the bowel. The patient, on her admission to the hospital, was exceedingly anxious to be operated on

immediately. Her bowels having been previously emptied by a dose of castor-oil and injections of warm water, she was anæsthetized—ether being used—and placed on the table in the usual position for such operations. The vaginal surface of the vagino-rectal septum was freshened on either side with a ∧ dissection, the apex of the dissection extending up along the sides of the rent, and the edges of the perineal rent being pared from below upward; a curved needle, with double silver-wire suture, was now entered near the inferior commissure, about half an inch from the denuded surface, and passed deeply through to the other side; another suture was passed through near the anus, and the two secured by pieces of elastic catheter, after the manner of the quill suture, bringing the deep parts firmly together. The approximation was completed by bringing the edges of the integument carefully together with several horse-hair sutures. There was very little hæmorrhage during the operation; the parts were then thoroughly cleansed, the knees bound together, and the patient placed in bed. Ordered bismuth subcarb. gr. v., pulv. opii gr. iss., every hour for four hours. Diet—milk, eggs, beef-tea, toast, etc.

October 14*th*.—Patient vomited freely after the operation, the paroxysms apparently excited by the opium, which was, on that account, discontinued for the time being. There was great difficulty experienced in drawing her water with catheter, owing to the swollen and distorted condition of the parts, and to their extreme tenderness. Ordered an anodyne at night.

October 15*th*.—Patient passed an uneasy night; suffered much from confined position. Urine drawn during night, and again to-day; parts extremely painful; bowels not moved.

October 16*th*.—Apparently doing well, but cannot retain her urine; passes it often, and suffers from the irritation it produces on the recently-cut surfaces; bowels moved.

October 17*th*.—Bowels moved twice to-day. Ordered one grain of opium at night. Appetite improving a little.

October 18*th*.—Bowels again moved twice to-day. Ordered opii gr. j night and morning. Appetite and general condition fair.

October 22*d*.—Wound examined to-day. Some purulent discharge; no union at upper edge, though there seems to be some lower down, near the anus and through the sphincter; the horse-hair stitches, which closed the outer edge of the wound, have pulled out. Considerable excoriation exists from the urine running over the parts. Bowels moving again.

October 25*th*.—Decided diarrhœa set in yesterday. Ordered bismuth subcarb. gr. x., tannin grs. iij., morph. sulph. gr. ¼, every three hours. Her menses appeared yesterday, also, anticipating the usual time by two weeks. Condition unfavorable.

October 28*th*.—Wire stitches taken out and wound examined; no union has taken place, except a small point near the anus. Another operation determined on, and the consent of the patient readily obtained. During the following week, every effort was made to improve the patient's general condition preparatory to a second operation.

November 4th.—Patient's condition much improved; diarrhœa checked, and the urine kept *alkaline* by a daily drink of potass. bicarb. 3 ij, liq. potass. 3 j, aq. Oj. Anæsthetized, and operation again performed. The sphincter ani was now first thoroughly paralyzed, and the point of union, which had obtained in the former operation, torn through; the whole lacerated surfaces, from the anal septum to the inferior vaginal wall, were then freshened with the scissors, and the two sides brought well together with *four* double silver-wire sutures; the external edges closed as before with four horse-hair sutures, and the parts thoroughly cleansed. The hæmorrhage was greater than at the preceding operation, more tissue being removed; but it was easily controlled by pressure. Patient's legs were now bound together, and she was put to bed. Ordered a vaginal injection daily of acid. carbol. et glycerine, āā 3 j, aquæ bullient. Oij. The bowels were left *to regulate themselves;* but a small hypodermic injection of Magendie's solution was given to allay pain. Diet, liquid food.

November 5th.—Passed a good night; parts very tender; great pain in drawing water; to obviate which it was ordered to be drawn *whenever necessary.* Wound dressed with carbolized oil.

November 6th.—Suffers intensely from irritation of bladder; water drawn several times both day and night; urine scanty and mixed with a ropy mucus, but is alkaline in reaction; wound doing well; bowels quiet.

November 7th.—Still great irritation of bladder; ordered it to be washed out with warm water twice daily, and injection of hydrastis canad. 3 j, aq. Oij.; water drawn as before; bowels not moved.

November 8th.—Passed a bad night; irritation of bladder continues; pain and swelling in the parts operated on; labia œdematous; ordered lead and opium wash locally.

November 9th.—Patient improving; bladder less irritable; not necessary to use catheter so often; wound looks well; stitches all in place; bowels moved; slight leucorrhœal discharge from vagina; continued same general treatment.

November 11th.—Very comfortable; silver-wire sutures removed; continued to wash out bladder with warm-water injections, followed by infusion of hydrastis canadensis.

November 15th.—Doing well. Superficial stitches removed, and the perinæum examined; union has taken place along the whole surface, though the sphincter has not regained its full tonicity. Injections into bladder and vagina discontinued. Bowels moved; patient passes her water naturally.

November 20th.—Patient discharged to-day at her own request.

January 16, 1871.—Patient came to hospital to day to report; says she "is in as good health as she ever was, and attends to her duties as formerly."

The failure of the first operation in this case was apparently due to three causes: *first*, the insufficient number of silver-wire

sutures, so that the deep portions of the perinæum were not sufficiently approximated; *second*, the troublesome diarrhœa with which the patient was affected at the time, and had been for two years and a half previously; *third*, the supervention of the catamenia and the troublesome incontinence of urine, whereby the two irritating fluids constantly trickled over the raw surfaces, thus interfering with union. The first of these difficulties, it will be seen, was obviated by the employment of *four* sutures, instead of two, leaving no points that were not in apposition; the diarrhœa was corrected by rigid attention to *diet* rather than by reliance on opiates, and by regulation of the bowels during the week that intervened between the first and second operations. Lastly, a constant supervision of the bladder was exercised; whenever the slightest desire was felt, the water was at once drawn—as often, frequently, as eight times during the day and night. It was found impossible for the patient to retain a catheter any length of time, owing to the irritability of the bladder. In addition to the care taken in drawing the water, the bladder was carefully washed out night and morning with warm water, and a daily injection of infusion of hydrastis given; the vagina was also thoroughly cleansed with the carbolic wash every morning, and every possible source of irritation removed. The details of this case have been given with some minuteness, to show the importance of *after-treatment;* for, without the most careful attention in this respect, no operation, however perfect, could have succeeded, so bad was the condition of the bowels and bladder.

The needle used in this and the two following cases is an instrument invented by Prof. Skene, and is specially adapted to operations of this kind. It has been fully described by the inventor in a paper previously published.[1]

Case II.—S. S., aged forty-eight, England. Admitted to hospital October 19th. Married twenty-eight years. One child, twenty-five years ago. No more children till six years ago, when she again became pregnant, and was delivered at full term of a healthy child. The labor was long and difficult, lasting two and a half days, but terminating spontaneously. Examination afterward showed a rupture of the perinæum, and the uterus

[1] Medical Record, March, 1871.

prolapsed and extruding from the vulva. The patient's health is poor; she is thin and anæmic; has been so since her accident; she is also much troubled with a chronic cystitis. Bowels loose, appetite poor.

October 20*th.*—Bowels having been cleared, and patient anæsthetized with ether, she was operated on as in the former case. (The operation for restoration of prolapsus uteri was also performed at the same sitting, but the account of it is omitted here.) The deep parts were brought together with three double silver-wire sutures, and the external ones with four horse-hair stitches. After operation, ordered opii gr. j every hour, till freedom from pain was obtained, with perfect rest; water to be drawn whenever necessary; diet to be mainly nutritious liquid food.

October 21*st.*—Passed a fair night; some nausea, apparently from opium, which was discontinued; no appetite.

October 25*th.*—Suffered much pain last night in the region of the bladder, rectum, and contiguous parts; straining; water drawn several times during night, which relieved her. Perspiration quite profuse. Ordered acid. sulph. arom. gtt. xx, morph. sulph. gr. $\frac{1}{6}$, ter die; bladder to be washed out with warm water twice a day. Bowels not moved.

October 29*th.*—Deep and superficial stitches taken out; the wound has united perfectly by first intention; bowels not moved. Ordered injections of carbolic wash into vagina; still suffering from pain and tenesmus of bladder; water has to be drawn often.

November 1*st.*—Patient has had several "sinking spells," pulse flagging; ordered spts. frumenti. Perinæum in good condition, but she still has great trouble with her bladder; the urine is dark, scanty, and offensive, with a thick white deposit; is acid in reaction. Ordered the hydrastic injections daily, and alkaline drinks. Bowels moved by injection.

November 3*d.*—Patient improving; gaining strength, and has fair appetite; bowels moved spontaneously to-day.

November 6*th.*—Improvement very marked. Sat up to-day for first time, seventeen days after operation; has an excellent appetite, and is in good spirits; still, has more or less irritation of bladder; injections continued as before; bowels opened.

November 9*th.*—Very comfortable, sits up most of the day. Injections of bladder discontinued; passes her water naturally, without much pain. Menses appeared.

November 12*th.*—Menses ceased to-day. Improving fast.

November 15*th.*—Discharged to-day well; general health good.

December 1*st.*—Patient reported herself at hospital to-day in excellent condition; gaining flesh and strength, and leaves in a few days for her home in Iowa.

Case III.—M. W., aged thirty-one, Germany. Admitted to hospital November 8th. Has been married seven years, has one child; born three years ago; perinæum was ruptured during the delivery of this child; the labor was very rapid and the head large, but she was nevertheless deliv-

ered without assistance. She has at present little control of her bowels, and her uterus is also prolapsed in what is known as the "third degree," evidently the result of the injury to perinæum. Her general condition is good.

November 9th.—Patient's bowels were well emptied by an enema, and, being anæsthetized, the laceration was closed in the manner already described, in the other two cases, four silver-wire and three horse-hair sutures being used; the deep sutures were secured with pieces of catheter, and complete approximation obtained. The wound was dressed with carbolized oil, as in the other cases. Patient bore the operation well; ordered anodyne to quiet pain, but there was no attempt made to confine the bowels. Light but nourishing liquid food to be taken.

November 10th.—Passed a bad night; suffers much pain; water drawn with catheter every few hours. Has several large hæmorrhoids, which add to the irritation. Some œdema of parts.

November 11th.—Considerable discharge from vagina; bladder very irritable; ordered it to be washed out with warm water, and an injection of hydrastin daily. Vagina to be syringed with carbolic wash. Bowels moved. Anodyne to relieve pain.

November 13th.—Quite comfortable; less irritation of bladder and parts operated on. Water drawn when necessary. Injections continued. Bowels moved.

November 16th.—Doing very well. Deep sutures removed; some ulceration from the pieces of catheter. Discharge from vagina the same. Much less irritation of bladder. Injections continued. Bowels moved.

November 19th.—Superficial stitches taken out; wound has healed everywhere, but at one point in the vaginal mucous membrane, from which there is a slight discharge; vaginal injections continued. No irritation of bladder; injections stopped. Passes water naturally. Great tenesmus of rectum and desire to go to stool; quieted by an injection causing free evacuation of bowels.

November 21st.—Patient well, sits up all day; no pain, appetite good. Very little discharge from wounds.

November 24th.—Discharged entirely well; health and spirits excellent. She was ordered to wear a T bandage to support uterus, and also directed to avoid all violent exertion.

December 16th.—Patient reported herself to-day; is in excellent condition, and discharging her customary duties.

II.—*Case of Intussusception.* Reported by JAMES H. THOMPSON, M. D., Milwaukee, Wisconsin.

MAY 14, 1871, I was called at 7 A.M. to see Stillman Thomas, laborer, aged twenty-five years, single, American. Found him suffering from intense pain in the epigastric and

umbilical region. Slight fulness of the entire abdomen. No tympanites, and no perceptible tumor, but entire abdominal surface extremely painful to the touch; pain greatly aggravated by the slightest change of position, which was on his back, with knees drawn up. Pulse 80, and nearly natural in volume. Skin cool and moist. Expression of countenance distressed. History: On the preceding day had an attack of vomiting and purging, which subsided at 5 P. M., immediately after which the pain and tenderness in the abdomen commenced, he was then given, by the family, ol. ricini ℥ ss. Early on the following morning I was sent for, the patient having had no passage from the oil, and having suffered intensely from pain during a sleepless night. I had treated this man for very similar symptoms the previous year, and now repeated the treatment, which was sinapis and warm baths over the seat of pain. A powder of hydrg. chl. mit. grs. x. and rhei pulv. grs. x., given immediately; pulv. Doveri grs. x., ordered every two hours, or so long as the pain should last. Gave him also an elixir of peppermint and chloroform for immediate effect. Saw him again at 6 P. M. No passage; pain and other symptoms aggravated—ordered an injection of salt and water, of which one quart was retained fifteen minutes, but produced no fecal evacuation; then gave him three comp. carth. pills, and ordered 1 gr. opium pulv. every two hours, or so long as pain continued, with directions to give ol. ricini ℥ j at midnight, if no passage. Called next day, May 15th, at 11 A. M., to find that patient had expired fifteen minutes before my arrival. I was informed that at 10 o'clock the previous night patient had a copious inodorous evacuation, half filling a good-sized chamber-vessel, after which the pain had increased; no vomiting, but spitting of a greenish-black fluid. From this time he had gone on gradually failing, but remaining perfectly conscious to time of death, an hour previous to which he got out of bed unaided, and attempted to use the chamber. What was it? I did not know, and so requested permission for a *post-mortem*, which, being granted, was made in company with Dr. E. B. Wolcott, Surgeon-General of Wisconsin, the same day, four hours after death. On making the section fully one quart of bloody serum escaped; the middle portion

of the bowel was intensely congested and partly gangrenous; about the central portion of the jejunum was found a pouch, or *cul-de-sac*, about three inches in length, as large as, and the shape of, a medium-sized pear, by its small extremity communicating with the bowel. The large and originally free extremity was firmly bound to the mesentery by ligamentous bands, the result, as I suppose, of his attack the previous summer.

Through the aperture thus formed between the pouch and the mesentery had passed a duplication of the intestine, in both directions, to such an extent as to cut off entirely even the passage of air through the gut. That portion of the jejunum had become so firmly twisted and strangulated, that it was found impossible to relieve it, until a portion of the intestines had been removed, and then only after a manipulation of several minutes. The contents above the constriction were fluid and feculent; below, the gut was empty. The stomach, liver, and other organs, so far as examined, gave no indication of disease.

III.—*Cases of Cancer treated with Cundurango.* By D. W. Bliss, M. D., of Washington, D. C., Professor of Urinary Pathology in the Medical Department of Georgetown College.

My attention was first attracted to this remarkable agent during a professional attendance upon Mr. Flores, the minister from Ecuador, through whom his government had conveyed to our Secretary of State a portion of the shrub, together with printed statements of its successful employment by eminent South American physicians. Having always conceived that a remedy would sooner or later be discovered for the cure of carcinoma and tuberculosis, so long the *opprobria medicinæ*, I was at once interested in the direct and encouraging exposition of the Quito doctors. With the hope of benefiting my own patients, and effecting some good for others, I determined promptly to test its merits by actual experiment, regardless of the charges and possible opposition to which I knew my honest efforts would be subjected by the hypercritical and ungenerous of my professional *confrères*. Fortunately,

several cases of unequivocal carcinoma were then under treatment. Accustomed to the remorseless ravages of a malady for which even the surgeon's knife afforded no adequate relief, I approached the experiment not without misgivings of success, but with the fixed purpose to render the test as complete as the limited supply of the plant in my possession would allow.

Mrs. Matthews, the mother of Hon. Schuyler Colfax, had been the victim of mammary cancer for a long period, which had already assumed secondary and constitutional symptoms in a marked degree. On the 29th of April last, I placed her on the decoction of cundurango, and had the gratification of observing an early and decided change for the better, in both the local and general conditions. One of its almost immediate effects was the relief of pain, and a free diaphoresis, characterized by an odor distinctly observable of the infusion itself. Upon the return of Mrs. Matthews to her place of residence in Indiana, I still continued to direct her treatment, and furnished the requisite supplies of the medicine.

On the 9th of May, just thirteen days after the commencement of the new remedy, her husband addressed me a letter, from which I make the following extracts:

. . . . . .

"The stony condition of the tumor has given place to softness. This morning I notice about one-third of the surface has turned from a scarlet to a white color, and it has commenced suppurating as though the thing were dead and coming out. The whole tumor is very much flattened, the discharge is different and not near so offensive. The greatest improvement is in her complexion. From a *tallowy*, puffy-looking, and somewhat bluish skin, she is regaining her old natural look, the skin shrinking, becoming wrinkled and clear.

"I am so happy in the prospect of a cure that I feel like a new man, as though a ton of lead had been lifted from my heart. Is it not a little singular, it has not had any perceptible effect on her nervous system? Her digestion is good, and she begins to feel that she will get well."

On the 14th of the same month Mr. Matthews writes as follows:

"This is the seventeenth day since I commenced the use of cundurango; shall cease for a few days, and note carefully the effect. When I began the treatment, Mrs. Matthews's breast was almost as hard as a stone, about four inches in diameter, the cancer itself two inches in diameter, with raised edges, hard and scarlet-colored, bleeding profusely at the slightest touch, emitting an odor of the most sickening and disagreeable kind, discharging a brownish, cancerous, limpid fluid; the countenance bloated, tallowy-looking, with a bluish pallor of the whole face; the lips turned blue at the least exertion, so that I have been very much alarmed, fearing a rapid crisis and dissolution; at the same time the tumor itself enlarged with fearful rapidity, so much so that I could notice the growth from day to day.

"Now all is changed—the countenance has resumed its old, familiar look; she moves about with great sprightliness, the blue of the lips no longer indicating fatigue or effort. The granular swelling under the chin is gone; strength increasing; the tumor itself much flattened and decreased in protuberance; the color changed to a white, maturating sore; the limpid cancerous discharge ceased, and in its place a healthy discharge of white matter much less offensive; the hardened glands are soft to the touch, the whole symptoms indicating most plainly to me that the treatment has, so far, neutralized the poison of the blood, and that another short campaign with cundurango will insure a complete cure."

On the 2d of the present month I visited Mrs. Matthews, at South Bend, and was indeed astonished at the rapid change which had taken place. The tumor had become soft, the color natural, the secondary glandular deposits had all disappeared. The improved complexion, muscular firmness, and elasticity of spirits, all pointed to an early and complete recovery.

Mrs. Handy, residing on M Street, in this city, was the next subject of experiment with the cundurango. This was a highly-typical and fearfully-advanced case of cancer uteri. The grayish color, unequal, irregular elevations of the ulcer edges, the sympathetic disturbance of the bladder, the paroxysms of intense pain, together with the hot, dry, shrivelled, yellow surface, the wasted muscles, sunken eyes, the small,

quick, wiry pulse, revealed one of those sad cases, where all hope of remedy fails.

The cundurango, in the form of decoction, was administered first to Mrs. Handy on the 31st day of last month. A regular record has been kept from day to day, describing the least change of symptoms, but I have not the space to introduce it here. Suffice it that even in this extreme case the beneficial effects of this wonderful remedial agent have been most apparent. The pain has steadily declined, the diseased parts are less tumefied and sensitive, and the discharge is very slightly offensive. The cachectic appearance of this patient has much improved, and she expresses herself as feeling altogether better.[1]

A lady of the family of Hon. Mr. Gorham, Secretary of the United States Senate, has had mammary cancer of several months' duration, and her condition was pronounced hopeless by leading Northern surgeons. I was called to see her on the 1st of June, of this year, and found cancer of the breast, with secondary deposits in the shoulder and humeral portion of the left arm, attended by extreme rigidity of the neck, and almost complete immobility of the affected limb.

A careful daily record has been preserved of this case, also, by which the most decided improvement is indicated. The mammary tumor has grown softer, and the line of skin-attachment bisecting the nipple is much less marked. The head, before stiff, is now perfectly free and movable, while the natural mobility of the disabled arm is restored, and the tissues, before hard, are now soft and natural. The general condition progresses favorably *pari passu* with the local improvement.

To both of these last-mentioned cases I have invited my experienced professional friend Dr. C. C. Cox, and the history of the treatment and its results have been carefully observed by that eminent physician. It may be proper to state that letters have been pouring in upon me from persons at a distance, suffering from cancer, who have had the opportunity to use but a very small portion of the remedy, and yet who report marvellous improvement in all the symptoms. As the

[1] It is to be regretted that the supply of cundurango for this patient was exhausted a week ago, and no more will be in hand until the 1st proximo.

readers of your JOURNAL may not have seen it, I shall give here the results of a chemical analysis of the plant made by Prof. Antisell, of this city:

ANALYSIS.

Physical Description.—Stem woody, shrubby, and covered with a greenish or ash-gray bark, the former tint being due to a coating of lichens on the surface. The branches are from half an inch to little more than an inch in diameter, the average being about the thickness of the finger. The woody fibre is straw-colored and brittle, breaking with a sharp fracture; it is almost tasteless, slightly aromatic, and bitter. *Bark.*—This contains whatever medicinal virtues are in the plant. It is of a gray color, slightly ribbed or fluted longitudinally from corrugation, the result of drying; it increases in thickness in the ratio of increase of the stem—in the thicker branches constituting more than half the weight of the whole, in the thinner somewhat less than half; readily separable from the stem by pounding or bruising, when it comes off in clean, longitudinal pieces; brittle in the transverse fracture, having a warm, camphory, aromatic, and bitter taste, resembling the cascarilla of the older collections. Under the lens it is readily resolved into three layers: 1. The inner layer or cambium of reticular woody tissues, having granules of starch, and particles of resin embedded. 2. A middle layer of woody fibre and dotted ducts, with resinous particles also in this layer. 3. The cuticular or outer layer of bark-cells, of a brown color, and containing tannic acid and coloring matters.

Ratio of wood and bark, average of three examinations:

Chemical Analysis of Bark.

Bark	49.72
Wood	50.28
Total	100.00

Constitution of bark in 100 parts:

Moisture	8
Mineral salts	12
Vegetable matters	80
Total	100

These vegetable matters were separable, by the usual methods, into the following:

Fatty matter, soluble in ether and partially in strong alcohol.	.7
Yellow resin, soluble in alcohol	2.7
Starch, gum, and glucose	.5
Tannin, yellow and brown coloring matter, and extractive	12.6
Cellulose, lignin, etc	64.5
Total	80.0

On distillation, no volatile oil or acid was obtainable.

No crystalline alkaloid, or active principle, was separable by the usual method of proximate analysis.

Whatever medicinal virtues the plant may possess must reside either in the yellow resin or in the extractive. The former is soluble in alcohol, the latter in water. In the water-decoction some of the resin is diffused, but the greater portion of resin is not extracted by water.

The therapeutic position of the plant, judged from analysis, is among the aromatic bitters.

I regret I am compelled to leave this interesting subject for the present. As facts accumulate hereafter, they will be promptly given to the profession, and my earnest efforts are pledged to extend to the suffering as rapidly as possible the advantage of this new and surprising agent of the materia medica.

Proceedings of Societies.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

Stated Meeting, June 5, 1871.

Dr. Abram Jacobi, President, in the chair.

The President announced the admission to membership of Drs. Milo A. Wilson, Charles E. Simmons, R. C. M. Page, P. Brynberg Porter, Richard Toscano, E. Darwin Hudson, John R. Cypert, William H. Johnston, Emily Blackwell, Augustus Wohlfarth, Patrick W. Cremin, Jacob D. Rogers, and Erskine Mason.

The report of the Committee on Intelligence was read by Dr. Castle; that of the Committee on Meteorology by Dr. Goodwillie, and that of the Committee on Diseases by Dr. Raborg. The last gave a comparison of the statistics of contagious diseases for April and May, showing a decrease in the number and violence of the cases of small-pox, scarlatina, and measles. It noted, also, the important fact that, in upward of fifty thousand vaccinations performed by officers of the Health Board this season, three-fifths of all the secondary vaccinations had proved successful.

A NEW THEORY OF SYPHILITIC INFECTION.

Dr. F. N. Otis read a valuable paper with the above title, illustrating it by diagrams. The writer's sketch of the clinical history of syphilis, as well as his *résumé* of the views of prominent syphilographers, from the earliest discussion of the subject to the present time, our limits compel us to omit, referring the reader to the full paper in the *Medical Gazette* of June 10th. Summarizing these views, he says:

"1. That, in regard to the origin of syphilis, the accumulated learning of centuries affords but the most unsatisfactory speculations.

"2. That nothing is yet positively known of its nature. Accepted as a virus, with a power to contaminate the blood, it is known only by its effects.

"3. That nothing is yet positively known of the mode by which the human system is infected by it. We may accept, as the generally-received opinion, the expression of Lancereaux, that 'the agents of the absorption of the syphilitic poison are those of other substances, namely, the venous capillaries, and, more especially, perhaps, the lymphatic vessels.'"

But, while giving this as the received opinion, the writer states his own very decidedly, that the virus consists essentially of disease-germs similar to those described by Beale in the secretions of vaccinia, variola, etc., and that it is absorbed exclusively by the lymphatics.

The disease-germ of Beale, which is so minute as to require a magnifying power of one or two thousand diameters, is held by its discoverer to "consist of a peculiar kind of living germi-

nal matter, the smallest particle of which, when supplied with its proper pabulum, will grow and multiply, giving rise to millions of little particles like itself, each having similar properties and powers." It is "living matter which has descended from the living matter of health, but which has acquired the property of retaining its life under new conditions," and has become possessed of such energy that it will grow and reproduce its like even when transferred from the seat of its development to another situation, provided only it find the proper nutriment. Besides these properties, it has the power of amœboid movement, like that demonstrated by Cohnheim in the white corpuscles of the blood.

Turning now to the lymphatic vessels, the writer adopts Robert Willis's theory, that one of their essential functions is to abstract from the blood its more fluid portions, thereby rendering it thicker in the veins than in the arteries, and enabling the venous radicles to fulfil their office of absorption by endosmosis. This absorption of the watery parts of the blood by the lymphatics takes place, however, as pointed out by Von Recklinghausen, not directly from the blood-capillaries, but through the medium of the tissues these supply; and this in order not only to diminish the pressure and increase the consistency of the blood in the veins, but also to diminish the pressure of the serous fluid bathing and nourishing the tissues, by constantly abstracting a certain portion of it, and so making room for its constant renewal through the transudation of a fresh supply from the blood-capillaries. To this end the ultimate ramifications of the lymphatic system are always separated from those of the blood-system by intervening tissue—tissue in which the current of serous fluid must evidently be setting from the blood-vessels toward the lymphatics.

Suppose the syphilitic secretion applied to an abraded surface of skin or mucous membrane? "We have now two separate influences, which may act separately or conjointly to carry the disease-germ into the lymphatic circulation: 1. The current of tissue-fluid which constantly sets toward the lymphatic vessels. 2. The power of amœboid movement of the germ itself." If these be deemed insufficient, we may bring in the aid of the nomadic white blood-corpuscle, which can entrap in its

extending arms, and incorporate with itself, not only germinal matter, but even foreign substances, and thus carry them along with it in its wanderings.

The paper argues that the disease-germ, whether by itself or in connection with the white corpuscle, will, in its amœboid progress, choose its course only toward the lymphatics, and not toward the veins, because it would not find in the latter its proper pabulum. The probable local action at the point of inoculation is given as follows:

"1. A coagulation of the superficial tissue-fluids. A dilatation of the superficial blood-vessels. A consequent slowing of the circulation. The coincident attraction of a variable number of wandering white blood-corpuscles—phenomena associated with any irritation of living tissue.

"2. An entrapment of the syphilitic disease-germ by the wandering white blood-corpuscle (through its amœboid movement), and the incorporation of the disease-germ into the substance of the white corpuscle.

"3. An appropriation (as pabulum) by the disease-germ of the substance of the white corpuscle; and the consequent development and multiplication of the disease-germ *in* the white corpuscle.

"4. A consequent necessity of the white corpuscle for an increased supply of pabulum from the tissue-fluids, the absorption of which produces a rapid increase in size, and an abnormal tendency to fission or multiplication of the white corpuscle, through whose substance the multiplied disease-germs are now disseminated.

"5. Through the multiplication of the white corpuscle, thus impregnated by the syphilitic disease-germs, the spread of the syphilitic influence at the point of inoculation, and thence into the adjacent natural channels of the white corpuscle, namely, the lymphatic canals, through which, by aid of the lymphatic current, they are carried along until arrested in the substance of the nearest lymphatic gland.

"While, however, certain of the wandering white corpuscles, incorporated with the syphiliti cdisease-germs, are stimulated to abnormal proliferation, and go on to spread their influence beyond the sphere of this immediate action, certain others,

whose predestined office is that of connected-tissue cells, become arrested in the coagulated albuminous medium at the point of inoculation; become fixed, and develop into connective-tissue fibrillæ, after the manner, described by Billroth, of the formation of normal cicatricial tissue, between which and the induration associated with, and considered peculiar to, the primary syphilitic lesion there appears to be but the difference of exaggerated formative power.

. . . . . .

"The influence of the disease-germ, as it eventually comes to be felt in the lymphatic vessels underlying the inoculated point, is in accordance with its accepted power to separate and organize the fibrine contained in the lymph, and thus to add rapidly to the induration previously inaugurated in the connective-tissue corpuscles outside the lymphatic canals, and underlying the abraded surface.

. . . . . .

"In the foregoing plan or theory of syphilitic infection it will be observed that an important feature of syphilis, accepted and insisted on by all authorities, is entirely omitted, namely, the *period of incubation.* This period of incubation is defined as 'the interval of apparent rest,' occurring between the inoculation of the syphilitic virus, in a given subject, and the appearance of the specific local lesion at the inoculated point; which lesion is stated to be the result of a local reaction consequent upon a general infection of the system—this occurring at the point of inoculation alone."

The writer reasons that, as there is such utter want of uniformity in the length of this so-called period of incubation—there being recorded differences of thirty-six days in cases of experimental inoculation, and of even seventy days in carefully-observed clinical cases—it cannot be compared with the period of incubation of the exanthemata, for example, and cannot be regarded as indicating constitutional infection at the moment of inoculation. Moreover, in certain cases showing a very brief period (one of them only thirty-six hours) the lesion was found at the frenum. "Now, it is just at this point that the superficial lymphatics of the glans penis approach nearest to the surface, rising, in this especial locality, in some instances,

according to Belaieff, to a point just underneath the epithelium.

"Further observations, which shall result in connecting a brief period of incubation with the occurrence of the initial lesion at the anterior and inferior extremity of the glans penis, may yet be made, and afford a corroboration of my own view of the incubative period of syphilis, namely, that it is the period required for the syphilitic disease-germ to traverse the distance from the point of inoculation to the interior of a lymphatic vessel, by the processes described in a previous part of this paper. Consequently, according to this view, syphilis is a local disease up to the period of the entrance of the disease-germ into a lymphatic canal. And I am also of the opinion that, instead of infecting the system at large, even at this time, it passes on, through the lymphatic vessel, into the parenchyma of the lymphatic gland with which it is connected, where it is retained, by conditions arising from the character of the parenchyma of the gland, and the coagulation of its tissue-fluids, for a period corresponding to the so-called secondary incubation of syphilis, recognized by all authorities as taking place before the constitutional evidences of the disease are ever manifested.

"In conclusion, I would state my belief in the possibility of a satisfactory explanation of some of the later manifestations of syphilis, through causes wholly dependent upon interference with the *lymphatic* circulation; and that further researches in the direction I have indicated will corroborate my claim, *that it is the germinal element of the blood and tissues alone that is primarily affected in syphilitic disease;* and that it is through the *lymphatic* system alone that the syphilitic influence is propagated to parts remote from the point of inoculation; and, finally, that it is to deposits of fibrin, organized, through the syphilitic influence, in and around the lymph-vessels and lymph-sacs, in the earlier stages of the disease, and its subsequent contraction, that the lymphatic obstructions resulting in various external and internal lesions, in the later stages of the disease, are chiefly due."

Dr. L. Weber thought that, if the disease were, as Dr. Otis had maintained, a strictly local one for a certain period

after inoculation, then it should be possible to extirpate the chancre successfully, and so prevent constitutional infection. But in the British Army this had been tried extensively without any such happy result.

Dr. Otis did hold the position that extirpation of the part inoculated, if performed early enough, would effectually prevent any infection of the general system. Quite a number of cases were recorded by Lancereaux, where experimental inoculation with virus unquestionably syphilitic had been made, and the sores thus produced extirpated; and in a certain proportion of these cases the disease never appeared.

Dr. Weber wished to make a slight contribution to the question of the duality of the virus in chancre and chancroid, and related four or five cases in which secondary and tertiary symptoms of syphilis had appeared, while the primary sore had failed to exhibit the characteristic induration. In some of these cases the interval between the primary infection and the recurrence of the constitutional symptoms was very great. In others he had not himself examined the seat of the lesion, until the secondary symptoms brought the patient to consult him.

Dr. R. W. Taylor related two cases, having a very short primary incubation. In the first, a married man, who had been for some time absent from his wife, had his only connection with a woman of the town on a Sunday. The next day he came to the speaker's dispensary-class, showing, just at the meatus, a spot twice the size of a pin's head, where the mucous membrane was not torn at all, but its epithelium had assumed a somewhat silvery aspect. It had not been touched with caustic. Prof. Boeck, who was present, recognized the appearance as one which he had several times seen in the initial lesion of syphilis, especially on the mouths of infants infected by the nurse. A simple lint dressing was applied. By Wednesday the spot was slightly indurated. Within a week the induration had become very marked; the epithelial scales had been shed; and there was a well-developed, hard chancre. In six weeks appeared a syphilitic roseola. The wife was examined, and found to be, and to have been, free from any sign of syphilis.

The other case was that of a young lad who had his first and only coitus one Sunday. Being the subject of congenital phymosis, he had, during the act, torn down the prepuce at the insertion of the frenum. On the Sunday following, he presented himself with a well-marked indurated nodule upon the frenum, the induration appearing to be then (seven days after inoculation) at least four days old. The surface of the sore was somewhat rough from the tearing, but it soon smoothed off, and became a typical chancre.

THE JACOBI PRIZE.

The Secretary. Dr. Purdy, reported, from the Comitia Minora, that the President of the Society, Dr. Abraham Jacobi, had established a prize of two hundred and fifty dollars ($250) to be awarded under the direction of the Society, and open for competition to the profession of the United States, for the best thesis on *The History of the Diseases of Infancy and Childhood in the United States, and of their Pathology and Therapeutics.* The above amount had been placed in the hands of the Treasurer of the Society, to be paid to the successful candidate, as determined by a committee to be appointed by the Society for that purpose.

On motion of Dr. Castle, it was voted that the Comitia Minora appoint the committee, with instructions to publish the terms under which essays would be received, and with power to withhold the prize, in case none of the essays presented should be deemed sufficiently meritorious.

The Society then adjourned to the first Monday in September.

Sanitary Laboratory in Dresden.—During the present year a chemical laboratory has been established by government, where all investigations respecting public health are to be conducted. Medico-legal matters will likewise be intrusted to the director of the establishment, and private individuals may also apply to the institution with reference to sanitary questions.

Bibliographical and Literary Notes.

ART. I.—1. *Proceedings of the Second Anniversary of the Nebraska State Medical Society*, held in Omaha, 1870, pp. 47.

2. *Transactions of the Minnesota State Medical Society*, held at St. Paul, 1870, pp. 46.

3. *Transactions of the Indiana State Medical Society*, held at Indianapolis, 1870, pp. 163.

4. *Transactions of the Medical Society of the State of West Virginia*, held at Parkersburg, 1870, pp. 76.

5. *Transactions of the Seventeenth Annual Meeting of the Medical Society of the State of North Carolina*, held at Wilmington, 1870, pp. 138.

1. THE second anniversary of the Nebraska State Medical Society was held at Omaha, June 7 and 8, 1870.

Dr. James H. Peabody, the President of the Society, opened the session by a short address upon the subject, "Medicine: is it a science as well as an art?" A very judicious remark was made by Dr. McFarland, in a letter addressed to S. D. Mercer, upon the abuse of the "plea of insanity" in law courts, and of the abrupt questions put to the medical witness, such as: "Doctor, do you believe this defendant mentally responsible, and therefore guilty of the crime with which he is charged?" "Such a question ought not to be asked," says Dr. McFarland, "of a medical man in court, unless, as in France and some other countries, he is a regularly-appointed commissioner to institute official examination of the case, thereby being clothed with something like official function."

We judge, from the contents of the report, that in the far West, as well as here in the East, the plea of insanity seems to be rather abused in criminal cases, and we heartily agree with the opinion that the question of insanity in courts ought always to be referred to regular and thoroughly-qualified experts. One such at least should be legally appointed in each county, and his nomination should be made by a committee appointed by the Academy of Medicine of the State.

Among the cases reported, we find a few interesting ones, viz.: one of a boy thirteen years old, subject to epileptic fits, and who received a kick from a horse, fracturing a large portion of the frontal bone. The case was attended by Dr. S. D. Mercer, and the wound healed in about twenty days. The most remarkable fact in the case is that, since the accident, the boy has had no recurrence of epilepsy.

Another case, reported by Dr. R. C. Moore, is that of a man who had been scalped by the Cheyennes. The scalp was entirely removed from a space measuring nine inches anterio-posteriorly, and seven inches laterally. The denuded surface, extended from one inch above the left eyebrow backward, nearly to the occipital protuberance, and laterally from one temporal region over the vertex, to the opposite side. The patient had received, besides, a severe tomahawk-wound causing a fracture of the parietal bone. The wound cicatrized entirely in about three months.

2. The first annual meeting of the Minnesota State Medical Society was held at St. Paul. This Society was first organized in 1855, but did not hold any meetings for many years previous to 1869, when the old Society was disorganized, and replaced by the present one.

3. The twentieth annual meeting of the Indiana State Medical Society was held at Indianapolis, May 17 and 18, 1870. The President, Dr. George Sutton, of Aurora, delivered an address upon the subject of "Man's Power over Nature, and the Means by which he aids and controls the Laws of Life." The subject is ably discussed, and, although rather too extended for an address before a medical meeting, whose members have generally so little time to spare, is full of interest.

The first paper read was on the "Treatment of Puerperal Hæmorrhage," by Dr. G. W. Mears. This paper was the subject of a very lengthy discussion.

The next paper was read by Dr. S. Mendenhall, on the "Utility of Ergot in facilitating Labor." The doctor claims that the prevailing idea, that ergot is prejudicial to both mother and child, is erroneous, and judiciously remarks that, when ergot is given at the proper time, and in proper conditions, it never causes any accidents. The proper way of

administering it he believes to be in infusion in warm water, the quantity to be one drachm of the fresh pulverized ergot to four ounces of water, to be given in three or four doses, when the womb is soft and sufficiently dilated.

The next paper in order is an elaborate and somewhat abstruse one by Dr. J. Van Voorhies, on the "Psychical Influence upon the Organization of Structures."

The three following papers are, one on "Reduction of Dislocation of the Hip-joint," by H. V. Page, of Peru, and one on "Reduction of Dislocation of the Hip," illustrating the principles of the flexion method, with two woodcuts, by Dr. R. S. Haughton, of Richmond, Ind.; and one on "Syphilis, its Pathology and Treatment." This last, although interesting as a monograph, contains nothing new to those familiar with the writings of Hunter, Bassereau, Bumstead, Diday, Ricord, Cruveilhier, and other syphilographers.

Dr. Wilson Hobbs reported a case of caries of the skull, removed by four operations. It was caused by contusion from the effects of a small fragment of shell, without any break of the skin. The case is very interesting, but cannot be condensed sufficiently to be well understood; besides, the four woodcuts accompanying it are necessary for an explanation of it.

Dr. C. E. Wright then read a paper on "Purulent Aural Catarrh," in which, after quoting from the different authors who have written upon the subject, he comes to the conclusion that to expect a restoration of the normal amount of hearing after long-continued inflammation of the middle ear, would be simply to expect a miracle; for the cavity becomes so changed by anchylosis of the ossicles by deposits of lime, and by hyperostoses, that to expect such a restoration would be absurd.

4. The third annual meeting of the Medical Society of the State of West Virginia was held in the city of Parkersburg, June 1 and 2, 1870. Its volume of transactions opens with a short address of welcome by the chairman of the Committee of Arrangements, Dr. W. Coles, of Parkersburg; after which the President of the Society, Dr. Hildreths, delivered the annual address.

The first paper presented is a "Report on the Topography, Climatology, and Epidemic Diseases of Wood County," by Dr. S. D. Safford, a paper of interest, but only of local value.

The next is a "Report on New Remedies" (such as bromide of potassium, carbolic acid, and chloral hydrate), read by Dr. W. H. Sharp, of Volcano.

It is followed by a paper on "The Hydrate of Chloral in Puerperal Insanity," by Dr. John C. Hupp, of Wheeling. The dose given at first was two and a half grains, and afterward a scruple, which caused the patient to sleep in twenty minutes.

So much progress in the knowledge of this remedy has been acquired since the time this paper was written, that we will abstain from any comment upon the subject.

Dr. E. A. Hildreth presented the second annual report on "Meteorology and Epidemic Diseases of Ohio County, West Virginia."

Dr. John Frissell, of Wheeling, read a "Report on Stone in the Bladder and Urinary Passages." The author reports twenty-nine detailed cases, of which ten were operated on by himself, by the following process: When the staff is introduced, he cuts (in the usual position on the left side) directly for the staff and neck of the bladder. He uses the left index-finger as a guide. When the dissection is fairly made to the urethra and prostate gland, with his left index-finger nail he guides the point of the knife through the urethra into the groove of the staff, just anterior to the prostate gland, and then with the same finger pushes the blade of the knife, held firm in its position, and pressed gently onward by the right hand, along the groove of the staff, till the finger and knife enter together in the bladder, and then continues pressing the blade of the knife with the finger till there is room enough to introduce the forceps. If after the forceps is introduced there is not space enough to remove the stone, he makes one or two lateral incisions in the bladder, while the parts are on a stretch by the pressure of the stone held firm with the forceps, which practically converts the operation into a bi-lateral or tri-lateral operation.

The author proceeds to explain the dressings and aftertreatment, and on the whole makes a very complete and instructive paper, which is really worthy of a more extended notice than our limited space will permit.

5. The seventeenth annual meeting of the Medical Society of the State of North Carolina was held at Wilmington, May 25, 1870. Its volume of transactions opens with an annual address by Dr. C. Tate Murphy, upon the "Heroic Character of the True Physician;" and is followed by an address of Dr. Charles J. O'Hagan, on the "Progress of Medicine."

A case of ligation of the right external iliac artery for traumatic aneurism of femoral artery is reported by E. Burke Haywood, A. M., M. D. In this case digital and instrumental compression had been used for weeks, but without any benefit. The whole limb was œdematous, and all the signs indicated the existence of extensive suppuration; speedy death was threatening. The operation was performed by Dr. White. Previous to etherizing the patient, an ounce of brandy was administered; the operation was successful, and two months after the patient was entirely well.

The next paper is by J. J. Satchwell, A. M., M. D., of New Hanover County, N. C.

The author dwells upon the topography and prevailing diseases of that county in a very erudite manner. Among the principal causes of disease, he accounts the changes wrought in the condition of the colored population since their freedom. "Prior to their emancipation, under the kind attention and fostering care of their former masters which in sickness as in health they received, their general health was as good and their mortality as small as those of the whites. But sickness prevails more generally now among them than among whites, and death is making sad havoc in their ranks."

Another cause to which the doctor alludes is the abuse of ardent spirits dispensed by the numerous *low*, i. e., *mean*, grog-shops and drinking-saloons which are found everywhere. "Nearly all the abominable, adulterated, inflammatory poisonous liquids in the shape of whiskey, gin, brandy, rum, etc.," says he, "that the ingenuity of man can manufacture, and which, from their poisonous and fatal effects, can no longer be im-

posed upon the Western, Eastern, and Northern markets, are now, from their cheapness and the too generous credulity of Southerners, flooded upon this poverty-stricken land."

We sympathize with the views of the writer, but we must beg him to believe that all the bad whiskey or brandy made in the East or North is not sent to North Carolina, and that our populous cities of the North and East get their share of this vile, slow poison.

Among the most common diseases, says Dr. Satchwell, and one that seems to be alarmingly on the increase in this county, is pulmonary consumption.

It would be interesting to inquire if the number is not somewhat increased by the influx of Northern phthisical patients who go South for the benefit of their health. The paper will well repay perusal, as it is carefully written, and full of useful information.

The next "essay" is on the "Diarrhœa of Children," by William George Thomas, M. D.

The writer gives us the results of his own twenty-eight years' experience. He refers very little to what authors have said upon the subject, but simply describes what he has observed and done. Among the causes of the complaint he calls attention to the sudden disappearance of *prickly heat*, which, he says, is almost surely accompanied by looseness of the bowels. Its reappearance upon the skin is a favorable augury. It is a rare circumstance for it to remain in complete efflorescence on the surface when the bowels are acting very freely. The rash is apt to disappear before the diarrhœa or soon after the looseness of the bowels has set in; and it is not an easy matter to decide which is the cause and which is the effect. Antacids, opium, calomel, and astringents, are the general means used by the author in the treatment of the disease.

The last paper is a "Report on Medical Experts," by E. A. Anderson, chairman of the committee. We see by the report that our brethren of North Carolina are no more protected by the laws of their State than we are by the statutes of ours, and that free advice, free medical opinions, and free labor, in the way of making *post-mortem* examinations, are no better compensated in that State than they are in ours; and

that bad laws and bad liquor do not come from one part of the land, but are disseminated equally. It appears from the report that, according to the members of the bar, the law has made no provision for any compensation to the physician as an expert; they have a right to summon him at their pleasure, and, when present, compel him to answer any questions they may put in the interest of their client, and give his reasons for these answers. This disingenuous and unfair course has been pursued in North Carolina for years back, and been quietly submitted to by the medical profession through ignorance of their rights. The truth is, says the reporter, that physicians are seldom law-makers; most politicians are members of the legal profession, and make laws to suit themselves regardless of the rights of others.

Another abuse is reported in regard to coroners' inquests. Physicians, being *requested* by these officials to make examinations, swear to their opinions, and when a bill is sent it is generally cut down two-thirds, and the last third never paid. Now, it is not quite so bad in New York, although in Westchester County, which is one of the richest in the State, something almost as bad happens. We have now before us a "Schedule of County Accounts" of said county for the year 1870, in which we see the bills of twenty-six physicians, for public services rendered, and amounting to $881.50, and for which $364 only was allowed. Two of the bills only have not been reduced, one for $10 and the other $6. Eight of the bills, amounting together to $505, received an allowance of $162.50, that is to say, about 25 per cent. Now, either one of two things must obtain: the physicians have sworn to a lie (a thing we cannot believe, as in the list we see some of the most respectable and honest practitioners of the county), for they have to swear as to the validity of their bills before a magistrate, or the amount of their claims is correct. If they have perjured themselves, they ought to be tried for perjury and condemned to the severest penalty of the law; if they have not, their bills ought to be paid to the full amount of the demand, as being legally correct.

Unfortunately for us, the most respectable and useful of professions is the one the least protected by the laws of the

country, and it will continue to be so until the profession, *en masse*, is strong enough to have laws made for its own protection; until medical experts, scientifically appointed and legally acknowledged and commissioned, shall act as referees in all medico-legal matters, and before whom all medical matters and discussions shall be judged.

In France, when a bill is contested by a client, and sued for by a physician, the court appoints one or more experts, taken from among the members of the profession, and their verdict is generally accepted without appeal. Until we have such laws in this country, the best plan for physicians, when summoned before a court to give an opinion, or before a coroner to make a *post-mortem* examination, is to require the fee in advance, or refuse their services.

ART. II.—*On Spermatorrhœa; its Results and Complications.* By J. L. MILTON, Surgeon to St. John's Hospital for Diseases of the Skin. Eighth edition, pp. 114. Robert Hardwicke, London.

A BOOK that has run through "seven large editions" may naturally be supposed to be well written, and on a popular subject. Mr. Milton's book is certainly fortunate in the latter respect. It has been treated of by numerous medical writers from Celsus down. The present treatise is divided into three chapters, on History, Pathology, and Treatment.

History is a point considered in most monograms, and in which the general public feel little interest. In regard to present views on the subject, Mr. Milton says: "The present state of opinion about spermatorrhœa, both in the profession and among the public, is not satisfactory; it has never been so, and there does not seem much prospect for improvement." This does not look as if he thought his book had settled all questions concerning the disease. "That the disease exists to a very great extent, far greater than is generally thought; that it yearly reduces hundreds if not thousands to impotence, and all its attendant ills, hypochondria, weariness of life, insanity, and so on; that not only every town, but every village,

could show victims to this neglected malady, are facts which I feel assured will not be disputed by those who have looked into the subject," might seem to many a very bold assertion, but reading further we find what the author considers a diseased condition: "The observation has been more than once made in medical papers, that one emission once a week or so can do no harm; and though this may hold good for a short period in early life, it becomes a very dangerous tenet when applied, as in the nature of things it will almost certainly be, to long-standing cases and a more mature age. . . . Flint's 'Practice of Medicine' says of involuntary emissions, 'occurring after intervals of several weeks or days (!) in persons of continent habits, they are physiological rather than pathological.'"

When Mr. Milton says (p. 13), that "in men who have reached the age of three or four and twenty, any thing beyond one emission a month requires attention," we presume most general practitioners would regard it as the exaggerated idea of a specialist. He is "inclined to assign much more importance to the nervous exhaustion than to the mere loss of semen." It would seem as if the exhaustion from nervous excitement would be as great in the female as in the male, but it is very common for the former to have intercourse to an extent which would be impossible for the latter; so that it seems necessary to refer at least part of the exhaustion to the loss of semen.

"Spermatorrhœa seems to me to arise from an irritable state of the testicles, *vasa deferentia*, and common seminal ducts," and indirectly from affections of the par vagum, sympathetic, and brain.

Among the results are all kinds of nervous symptoms, especially a feeling of having been struck on the back of the head, dyspepsia, deposits in the urine.

In the pathology of impotence we find the following (p. 28): "In fact, a man who remains continent can hardly reach twenty-six without becoming partially if not wholly impotent. At twenty-five there is a risk, and I am not quite certain that he is safe at twenty-four." What an argument for early marriage, this opinion from an author who has had such an extensive experience!

What is lacking in the section on the "Pathology" is made up in that on "Treatment," to which more than half the book is devoted. Among the remedies mentioned are *tonics*, such as quinine, tincture of the sesquichloride of iron (beginning with ♏ xx rising to ʒj t. d.), ergot of rye; *sedatives:* camphor, lupulin, digitalin, opium, hydrate of chloral, belladonna, bromide of potassium; *aperients; diuretics.* Bathing the genitals and abdomen in cold water and sleeping cool are recommended, as is also the urethral ring. An electric alarm to arouse the patient (and family?) is also described and well-spoken of, but it is feared "that the cost (three or four pounds) will always deter the majority of patients from employing it."

Art. III.—*Elements of Medical Chemistry.* By B. Howard Rand, M. D. Second edition. Philadelphia: J. B. Lippincott & Co.

This is a neat little volume of four hundred and twenty pages, and is designed especially for medical and pharmaceutical students. It differs from the ordinary text-books on chemistry, in the omission of chemical laws and theories, and the substitution of officinal forms, medical effects, and pharmaceutical names of important compounds.

The older nomenclature is adopted throughout, as the author regards the new chemical theories with but little favor. The formulæ are rendered in the prescription style wherever the making up of a preparation is described. Organic chemistry receives a fair share of attention, and is embellished with the best illustrations in the book.

Altogether the design of the book is good, and although scientific instructors may reject it in consequence of the conservative notions of the author on the subject of pure chemistry, we think it undeniable that the average medical student will be able to acquire from it a more satisfactory knowledge of the science than from other text-books of its grade, inasmuch as it exhibits the direct connection between the great outline of chemical science and its application to medicine.

ART. IV.—*A Text-Book of Elementary Chemistry, Theoretical and Inorganic.* By G. F. BARKER, M. D., Professor of Physiological Chemistry in Yale College. Charles C. Chatfield and Co., New Haven, 1870, 12mo, pp. 342.

STUDENTS who desire the most complete yet concise exposition of the principles of modern chemistry, should read Prof. Barker's book.

The author makes no concessions whatever to the old theories, but seeks to expound the new views in the clearest possible manner, consistent with the space within which a school text-book must be comprised. The task has been accomplished in an admirable manner.

Already the book has been widely adopted in scientific schools and colleges, and another edition is demanded to supply the increasing want.

To very young students the difficulties of the first chapters are reduced by departing from the plan of the author, so far as to study alternately chapters of the First and Second Parts. The typography and illustrations are excellent.

PROF. BARTHOLOW'S valuable little work on Spermatorrhœa [1] has reached its third edition, a material proof that it has been well appreciated by the medical profession. It is, as we have said before, a very useful book, treating of a subject altogether too much neglected, on the one hand, by the profession, and, on the other, too much attended to by charlatans. The book has been partially rewritten, and formulæ added, making the work still more useful; we again cordially recommend it to our readers.

MESSRS. BAKER, VOORHEES & Co., of New York, announce The Law of Insanity: being a Digest with leading Cases in

[1] Spermatorrhœa: its Causes, Symptoms, Results, and Treatment. By Roberts Bartholow, A. M., M. D., Professor of Materia Medica and Therapeutics in the Medical College of Ohio; Lecturer on Clinical Medicine, and Physician to the Hospital of the Good Samaritan; Lecturer on Morbid Anatomy, and Pathologist to the Cincinnati Hospital, etc. New York: William Wood & Co., 1870.

full. By John J. Elwell, M. D., member of the Cleveland (Ohio) bar.

Gant's Theory and Practice of Surgery is announced by Lindsay & Blakiston of Philadelphia.

Dr. Henry R. Silvester has published (Churchills, London) a little *brochure* on the Discovery of the Nature and Use of the Spleen.

Mr. William McCormac, F. R. C. S., has just published, through the Churchills, of London, Notes and Recollections of an Ambulance Surgeon, being an Account of Work done under the Red Cross during the Campaign of 1870.

Books and Pamphlets Received.—Uterine Catarrh frequently the Cause of Sterility. New Treatment. By H. E. Gantillon, M. D. Boston: James Campbell, 1871, pp. 54.

On Some of the Advantages of Animal Vaccination for the Prevention of Small-pox. By A. Vintras, M. D. London: J. & A. Churchill, 1871, pp. 21.

On the Study of Dermatology. By Louis A. Duhring, M. D. Reprint from the *American Journal of Syphilography and Dermatology.*

The Detection of Criminal Abortion. By Ely Van de Warker, M. D Reprint from the *Journal of the Gynæcological Society.* Boston, pp. 16.

First Annual Report of the Board of Trustees of the New York State Hospital for Diseases of the Nervous System.

Bromides: their Physiological Effects and Therapeutical Uses. By Roberts Bartholow, A. M., M. D. Providence: S. S. Rider & Bro., 1871, pp. 47.

Semi-centennial Report of the Directors and Surgeons of the New York Eye and Ear Infirmary. Pamphlet, pp. 28.

The Rapid Cure of Aneurism by Pressure. By William Murray, M. D., M. R. C. P., Lond. London: J. & A. Churchill, 1871, pp. 43.

Review on Modern Dermatology. By James C. White, M. D., Lecturer on Skin Diseases in Harvard University. Reprinted from the *American Journal of the Medical Sciences*, for April, 1871.

A Month's Tour through the Alps of Switzerland. By James D. Dana, LL. D., Silliman Professor of Geology and Mineralogy in Yale College. New Haven, Conn.: Charles C. Chatfield & Co., 1871.

A Treatise on Diseases of the Nervous System. By Prof. William A. Hammond, M. D. D. Appleton & Co., 1871, pp. 754.

Human Locomotion. How we stand, walk, and run. By Prof. B. G. Wilder, M. D. Cornell University, pp. 18.

The Eye in Health and Disease: being a Series of Articles on the Anatomy and Physiology of the Human Eye, and its Surgical and Medical Treatment. By B. Joy Jeffries, M. D. Boston: Alexander Moore, 1871, pp. 119.

The Medical Register of New York and Vicinity, for the Year commencing June 1, 1871. Published under the Supervision of the New York Medico-Historical Society. A. E. M. Purdy, M. D., Editor. New York: William Wood & Co., 1871.

Reports on the Progress of Medicine.

OBSTETRICS AND DISEASES OF WOMEN.

1.—*Two Cases of Premature Labor; one in a Patient with Croupous Laryngitis, the other in a Patient with Carcinoma of Mammæ and Osteomalacia Rubra Incipiens.* By Dr. J. Pippingsköld, Helsingfors, Finland. [Berliner Klinische Wochenschrift, October 3, 1870.]

In December, 1858, Mrs. M., aged twenty-seven years, pregnant for the second time, was attacked with laryngitis, which soon assumed a croupous form. Notwithstanding the most constant care and treatment, she became rapidly so much worse that it was feared œdema glottidis might at any moment take place; vomiting was also a most troublesome symptom, the least irritation of the fauces bringing on an attack. Inasmuch as pregnancy had reached the end of the ninth month, it was decided to bring on labor by artificial means. The warm douche of Kiwische was employed at intervals of an hour. After the second injection the uterus commenced to contract, and after the fifth the end of the index-finger was introduced into the cervical canal. The pains continued, but were weak, when an attack of asphyxia occurring, they ceased or returned after long intervals. In order to hasten the labor the membranes were punctured, and a portion of the waters came away. After repeated digital dilatation of the os, forceps were introduced, the cervix incised near external os, and child delivered nine hours after the first douche. The placenta was taken away, and with the use of ice the uterus contracted. The lividity and asphyxia of the patient still continuing, tracheotomy was performed, but patient died two hours after the operation. False membrane was found in the larynx and in the trachea, in the neighborhood of the incision. The child lived fifteen days after birth, and died from want of care, and erysipelas, which had its origin in an ulcerated umbilicus. The writer adds that, so far as he knows, but two cases of tracheotomy in croup have been successful: one performed by himself on a patient two years old, and another performed by Dr. Stenböck, on a boy aged three years.

The second case of premature labor was that of a multipara, aged thirty-five years, pregnant seven months. The tumor had appeared at the beginning of pregnancy, and had increased so in size as to become troublesome. That it was malignant in its nature, there was no doubt. Inasmuch as the patient was in good condition, and the axillary glands only sympathetically affected, it was thought best to postpone any operative interference till a later period, when the child would have a better chance to live. Notwithstanding excellent care the patient began to lose strength, and to suffer from pains in the pelvis, lower extremities, especially the right, which became intolerable when pressure was made upon these bony parts. The patient had felt these pains for some time, but had been able to get about, though her gait was limping. Now, however, the slightest movements were exquisitely painful, and she was moved and turned by the aid of sheets; the feeling was as if a broad girdle were tightly bound around her loins. The pains simulated at times those of sciatica, but could never be referred to the distribution of particular nerves. More probable than a carcinomatous metastasis to the pelvis is the idea that we had to deal with a sponginess of the bone, in connection with the congestive stage of osteomalacia rubra. At the end of the ninth month the patient had lost her appetite, repeated vomiting had set in, pulse was frequent and weak. A catheter was introduced between the uterus and the membranes, and fixed. Thirteen hours after, the child was born. Soon after her confinement the patient began to improve, went in the open air and inhaled the sea-breezes. The appetite returned; she could sit up and support herself upon her feet. The pains in the pelvis and extremities disappeared, and the tumor of the breast became much reduced in volume, and its ulcerated surface healed. Whether the cure is a permanent one remains to be seen, but in any event the premature labor saved the life of the child and lengthened that of the mother.

2.—*On Painful Pregnancy.* By Dr. Laforgue. [Lyon Médicale, December 4, 1870.]

There are many cases where pregnancy, though normal in other respects, is associated with uterine pains, which do not indicate any morbid complication or even affect the general health of the woman. These cases the author designates by the term "painful pregnancy." The pains in these cases are located in the walls proper of the uterus. They are distinct from the uterine pains sometimes associated with the advance of a difficult pregnancy, or from those pains experienced in the later part of gestation, a few weeks before regular labor. Sometimes they only exist upon a small point; at other times they embrace the whole extent of the uterus. In the first case they are continued, in the second they are irregularly intermittent, and their reappearance, or rather their paroxysm, seems to coincide with some muscular motion, as coughing, pressure upon the abdomen, fœtal motions, etc. These pains are almost continually associated with a hardness, or a greater tension of the uterus, or finally with a true contraction persisting during the whole duration of the paroxysm. Usually there is very little constitutional disturbance. In these cases, the pregnancy follows its regular course, and the fœtus not only does not seem to suffer, but, on the contrary, it is born with vigorous health and with remarkable development.

The uterine congestion which is invoked as an explanation of these pains is almost always independent of their production. M. Laforgue attributes them to a want of harmony between the fœtal and the uterine development. The contained fœtus having a tendency to outgrow as it were the

containing walls of the uterus, the result should be an exaggerated distention, and consequently a painful sensation of the walls of the uterus. This idea is confirmed by the fact that the uterine pains of which we are speaking are felt especially in cases where there is an exaggeration of volume in the contents of the womb, as for example in cases of double pregnancy, of hydramnios, or even in the case of excessive development of the fœtus and its annexes.

The treatment is indicated by the above considerations. In cases of dropsy of the amnion especially, tonics should be employed; for it is by strengthening the system that the formation of this excess of liquid will be prevented. When the size of the fœtus is the cause, iodide of potassium will afford greater benefit than bloodletting, which weakens both mother and fœtus, without preventing the return of pain. Iodide of iron is given in preference to iodide of potassium in weak women, and those predisposed to anæmia.—(*Revue Médicale de Toulouse*, September, 1870.)

3.—*Rupture of the Uterus.* [Madras Monthly Journal of Medical Science, July, 1870.]

The following interesting cases are copied from the Annual Report of the Government Lying-in-Hospital, at Madras, by Prof. W. H. Harris, M. D., Superintendent of the Hospital.

Vullyammah, aged thirty-three, sixth pregnancy, was admitted into hospital at 9 A. M., 24th December, in a state of complete collapse, pulseless, cold, and gasping for breath, said to have been in labor thirteen hours before admission, and membranes to have ruptured at commencement of labor. Pains ceased suddenly nine hours before, but she continued to have semi-involuntary action of the abdominal muscles, causing her to bear down and strain from time to time. Limbs of the child distinctly felt through the abdominal parietes, and uterus in a state of firm contraction n the right iliac region, abdomen tender and tympanitic. The head is found in first position high up in the brim, and the margin of a rent in the vagina can be felt on the left side. Brandy was administered, and delivery of a male child accomplished at once by long forceps, the head being perforated after the blades had been adjusted (to facilitate extraction). The placenta followed, with a quantity of coagula, and the vagina and the cavity of the peritonæum were sponged out as cleanly as possible, with new sponges wrung out of warm water.

After delivery, a hypodermic injection of atropine $\frac{1}{60}$ gr. was administered, and brandy repeated with ʒ j tinct. opii. The breathing seemed somewhat improved after delivery, and the pulse returned very feebly at the wrist. Ordered brandy ℥ ss, opium gr. j, every half hour, broth, hot bottles, turpentine frictions to extremities, many-tailed flannel bandage. At 2 P. M. the surface regained its temperature, and the woman slept at intervals during the day and night. She took 13 grs. of opium and 15 oz. of brandy during the first 24 hours after delivery. At 10 A. M., 25th, pulse 144, respiration 36, temperature 100, drowsy, but pupils not contracted, slight tenderness, lochia rather pale. Cont. rem.

Vesp.—Pulse was 120, respiration 36, temperature 100, skin warm, moist, and soft, abdomen rather tympanitic. Doing well.

December 26th.—Abdomen more tympanitic, rather hard, and containing a very small quantity of fluid, which is only just perceptible on firm palpation. Respiration 36, but since 8 A. M. has become somewhat labored, from excitement caused by her relatives prevailing upon her to be removed to their own house. Temperature 96; pulse 140, full, but compressible. Has

taken 16 grs. of opium, and 12 oz. of brandy since yesterday. Pupils contracted. Has slept for an hour or two at a time during the night, and is now but little drowsy, and talking quite sensibly. Continue brandy and opium. Removed by her people at 11½ A. M.

December 27th.—Reported to be still alive and much the same. February 4, 1870, the woman is reported to have made a complete recovery.

Coollammah, aged twenty-one, second pregnancy, was admitted into hospital at 10 A. M. on the 15th of November, moribund, with symptoms of internal concealed hæmorrhage. Cold surface, imperceptible pulse, gasping for breath, and extremely restless, was unable to reply to questions, though was not insensible. It was stated by her friends that the day before she was restless and refused food, and toward evening complained of pain in the lower part of the back and a dragging pain in the nape; was not supposed to be in labor, and no midwife had been called in. Toward morning she became restless and cold, with hurried breathing, and arrack was given to her; the pain continued just as at first. There had been no appearance of bleeding.

On examination, the os admitted the finger, but no presentation was within reach, and, on withdrawing it, it was covered with vaginal or cervical mucus, but not a tinge of blood. The uterus was found at the lower part of the abdomen, longer than usual in transverse diameter, and irregular in outline. High in the abdomen, the body and limbs of a child could be distinctly felt immediately under the abdominal parietes. Fœtal heart inaudible.

It seemed doubtful whether the uterus itself had ruptured, or whether the child had escaped from the cyst of an extra-uterine gestation.

Brandy was given immediately, with a large opiate, but the woman was at the point of death, and expired a few minutes after. The abdomen was immediately opened and the child extracted: the amnion in which it was enclosed was unruptured, and contained the amniotic fluid. The child, a female, was still, and the cord quite flaccid and pulseless. The cavity of the peritonæum was filled with coagula and fluid blood, and the uterus was found ruptured through the fundus, from before backward, as low as the middle third of the organ. The placenta was *in situ*, having been only partially detached by the contraction of the uterus; the membranes over the os were still entire. Along the margin of the rupture, the parietes of the uterus were extremely attenuated, and consisted of little more than the peritoneal investment and the external layer of fibres. There was no rigidity of the os to account for the rupture, which seemed solely due to the condition of the uterine parietes above noted close to the margin of the placental attachment.

Thoyee, aged twenty-three, fourth pregnancy, was admitted into hospital at noon, 18th December, said to have been in labor twenty-six hours, and membranes to have ruptured twenty-five hours before admission; pains ceased sixteen hours before, skin hot, pulse very rapid, small and thready, respiration hurried, anxious countenance, eyes sunken, abdomen tender and tympanitic. Vomited while coming to hospital, bowels very loose, said to have been the effect of a purgative enema given by an East-Indian midwife in town. The limbs of a child were easily felt under the abdominal parietes, and uterus contracted and empty on the right side. Os open, admitting the hand, which, on being passed up, enters a rent through the cervix on the anterior and left side into the cavity of the peritonæum, where the child had wholly escaped along with the placenta. Symptoms of collapse soon set in, surface became cold, respiration more hurried and labored, pulse disappeared at the wrist, face and forehead bedewed with cold perspiration. Tinct. opii ℥ ss, brandy ℥ ss, on admission, and the latter con-

tinued in doses of ℥ ss. every half hour, hot bottles to sides, blankets, etc.; a subcutaneous injection of atropine was also given at 1.30 P. M. (♏ viij. 1 gr. sol.) At 1.45 gastrotomy was performed in the usual way, an incision five inches in length was made below the umbilicus, nearly in the median line, the placenta was found lying immediately below the incision, and the child, a large male, was delivered through the opening by the feet. All blood, etc., were carefully wiped out of the cavity by clean sponges; the intestines and other viscera were found already greatly inflamed; the wound was closed by four deep and five superficial wire sutures, without transfixing the peritonæum. A many-tailed flannel bandage and dressing were then applied. Opii gr. j every hour, and brandy ℥ ss semihorâ. Woman did not rally after the operation, and a hypodermic injection of liquor ammoniæ ♏ v. c. aq. ♏ x. was inserted into the arm with the effect of temporarily raising the temperature; hot bottles, etc., continued.

She expired at 3½ P. M., 1¾ hours after delivery.

4.—*Tubal Pregnancy.* By Spiegelberg. [*Arch. für Gynäkologie.*]

The only authentic case of tubal pregnancy in which the fœtus attained maturity is related by Saxtorph, and the history of this case is not sufficiently minute to be made use of: so that the full clinical report of a similar case which occurred in the practice of Spiegelberg is of great interest. The patient was a peasant-woman, forty-four years old, pregnant for the fourth time, and had reached the end of gestation without any abnormal symptoms, when fugitive labor-pains were soon followed by convulsions, coma, rapid prostration, and death in a few days. The urine was albuminous, and contained urinary casts. A *post-mortem* examination disclosed a fully-developed dead fœtus, enclosed in membranes, and lying in a musculo-membranous sac which was formed by the distended and developed Fallopian tube, the placenta having its attachment anteriorly. A minute microscopic report by Waldeyer confirmed the opinion that it was only the tube which had taken part in the development of the sac. Bundles of muscular tissue were found, the tissue of the ovary recognized microscopically, and, by careful manipulation, the folds of the right broad ligament were separated from one another up to the point where the sac commenced, which thus corresponded with the position occupied by the Fallopian tube, while a probe passed from the angle of the uterus into the sac along a short canal. Spiegelberg explains the fatal termination of the case by the eclampsia of the mother causing the death of the fœtus, subsequent separation of the placenta, hæmorrhage into the sac, which was already distended to its utmost capacity, rupture, and death from peritonitis. The diagnosis was not made during life, owing to the normal course of the pregnancy, and the fact that the tumor corresponded so closely in position and size with the gravid uterus.—(*Philadelphia Medical Times.*)

5.—*Version* versus *Forceps in Contracted Brim of the Pelvis.* By J. J. Phillips, M. D. [Lancet, March 25, 1871.]

We quote these cases, reported by Dr. Phillips, who is assistant obstetric physician to Guy's Hospital, merely to aid in forming a conclusion on the important and as yet undecided question of the proper treatment to be pursued in case of contraction of the antero-posterior diameter of the superior strait of the pelvis:

Case I.—On April 25, 1870, I saw, at Islington, a patient in labor with her seventh child. Her first pregnancy terminated prematurely at the seventh month, but the infant did not long survive its birth. This was the only child born alive. To this succeeded other premature deliveries; but it was believed that the fifth child and the sixth were born at term. In her last labor she was seen by a distinguished physician, who, failing to complete delivery by the forceps, performed version, and delivered her of a still-born male child.

The patient was short in stature, but there did not exist any apparent deformity of the spine or of the lower limbs. When I saw her, on the present occasion, she had been about fifteen hours in labor, and the os uteri had been fully dilated for some hours, but the child's head had not entered the pelvis. The pulse was of good power, and there were strong rhythmical uterine pains. The sacral promontory was easily reached by the finger. It was determined to administer chloroform. I then explored the pelvis, and found that the antero-posterior diameter at the brim, as accurately as I could measure it, was very little over three inches. I applied the long double-curved forceps, though I hardly expected to succeed with them; but no justifiable amount of traction produced any effect in bringing the head through the brim. I then seized a foot: the child rotated easily, and, as the soft parts were dilatable, the lower half of the body was soon born. The shoulders were hooked down by carrying the trunk first well forward and then backward. I anticipated considerable difficulty in extracting the head, but steady traction, with one hand on the back of the neck and the other on the legs, soon brought the head into the cavity with a slight jerk. The child—a good-sized female one—was born asphyxiated, but was resuscitated by artificial respiration, though it was about twenty minutes before she breathed vigorously. I heard subsequently that the mother and the child progressed favorably.

Case II.—On the evening of the 3d of July, I was called to a patient of the Royal Maternity Charity, aged forty-one, who was in labor with her sixteenth child. Of the fifteen children seven only had been born alive. She had been delivered of the last five "by instruments," and of these four were born dead. The patient had neglected repeated warnings to have premature labor induced. The midwife said that she had been delivered once by my predecessor in the Charity, Dr. Barnes, and that he advised labor to be brought on, in any subsequent pregnancy, about the seventh or eighth month. I found a fat woman, complaining loudly, and urgently requesting instrumental assistance. The liquor amnii had escaped eight hours previously, and since then there had been strong labor-pains. The abdomen was very pendulous, the uterus lying forward, and child's head had very slightly entered the brim. The pulse beat 130 per minute. I endeavored to restore the uterus to its proper axis by means of a broad binder, and subsequently applied the long double-curved forceps, which locked easily. I felt confident at first that the forceps would succeed; but, after using as much compressive power and firm traction for a considerable time as I deemed compatible with the life of the child, I desisted. Dr. Richards then kindly placed the patient under the influence of chloroform, and, introducing my hand, I carefully examined the brim of the pelvis. The conjugate diameter was estimated at about three inches and a half, but the fœtal head was very large and firm. I turned the child without difficulty. The head engaged in the pelvis in the left oblique diameter; its liberation was effected after meeting with much resistance. The child, a large male, though at first apparently dead, soon recovered. The mother suffered from chronic bronchitis and emphysema, and her convalescence was rather slow, as indeed it had been after previous labors.

Case III.—Early in the morning of the 18th of February, I was summoned to a case of difficult labor, in which repeated attempts had been made to deliver by means of the long forceps. The history which I obtained was, that the patient was the mother of three or four children; that each successive labor had been increasingly difficult; and that the last had terminated, with the aid of the forceps, in the birth of a dead child. The os uteri was dilated to the size of half a crown on the preceding morning; and at seven in the evening it was fully dilated, and the pains were frequent and very strong Six hours later, as the fœtal head was pressed into the pelvic brim, but would not pass through it, the forceps were applied; but the attempts to bring the head into the cavity were unavailing. I turned the child slowly but easily, the patient being fully under the influence of chloroform. The head became again fixed at the brim for four or five minutes, but was then liberated by firm traction. Contrary to expectation, the child, after a little attention had been paid it, began to breathe, and subsequently to cry lustily. I have no note of the estimated dimensions of the pelvis in this case; but the obstruction was due to a jutting sacral promontory, which had produced a marked depression on the left parietal and frontal bones of the fœtal head.

6.—*Case of Spontaneous Inversion of the Uterus.* Reported by Mr. Webster Adams. [British Medical Journal, December 24, 1870.]

On the 21st of April last, I was summoned to the house of Mrs. K., to attend her in her accouchement. On arrival at the house, I found the patient a young, healthy-looking woman, about twenty-six years of age, five feet six inches in height, and dark-complexioned. She complained of pains in the back and other symptoms of labor. I made an examination, and found that the pains were spurious. Consequently, I administered a full dose of tincture of opium, and left directions for the nurse to send if any change occurred. Nothing, however, happened until the morning of the 22d, when I was sent for about 9 A. M., and went immediately. The pains had completely changed; and my patient, I had no doubt at this time, was suffering the natural pains of childbirth. I made another examination now, and found the os uteri soft and dilating; the head presenting. There was no hæmorrhage; and Mrs. K., to all appearance, was doing well. The pains went on; and, after about an hour and a half, the child was expelled. No ergot was administered. The uterus did not contract for some little time after the birth of the child, probably a quarter of an hour. After that time, however, it began slowly to do so; and she complained of a great bearing down, as she termed it, which, upon examining, I believed to be the placenta descending. I accordingly requested her to give way to that feeling, and strain slightly. She did as I directed her; and immediately, without any traction upon the cord, the uterus became inverted, and came down outside the vulva, the placenta being attached to the fundus. No hæmorrhage occurred at this time. Immediately the patient sank into a state of collapse, with cold, ashy sweats. She was pulseless, to all appearance, and had a livid countenance and cold extremities. The uterus was immediately, or after the lapse of a few minutes, returned, after removing the placenta, when a gush of blood followed, which was checked by pressing the uterus firmly, and freely applying cold. Stimulants were freely administered, Liebig's essence of beef, brandy, etc. Cold water was copiously employed over the abdomen, and mustard poultices to the calves of the legs. Unconsciousness continued for several hours, when at last consciousness began to return, and the pulse became more full and per-

ceptible, the extremities warmer, and she began to slowly return to her consciousness and feeling, as she expressed herself afterward.

April 23d.—The pulse was about 90, soft and compressible. There were no head-symptoms, no pain, nor sickness. She was ordered to continue her beef-tea and wine-and-water. She had had a few hours' good sleep during the night, and was considered to be doing favorably. I visited her once or twice during the day, and she still continued improving.

April 24th.—She had slept pretty well during the night. The pulse was about 90, still and soft. The countenance was a little pale; the lips were slightly blue. She told me that she felt better. The stimulants were ordered to be continued.

April 26th.—She still continued to improve, and had had relief from the bowels. The tongue looked clean. No febrile symptoms of ay moment were present. I ordered her a simple saline mixture, with ten-minim doses of spirit of nitrous ether.

She continued daily to improve, and at the end of a fortnight was able to leave her room. She has been taking a tonic up to the last week—viz., disulphate of quinine and tincture of perchloride of iron—from which she says she derives much benefit. She has no bearing down, no loss, no pain, no fever, and is daily recovering her usual strength.

7.—*Conjoint Extra- and Intra-Uterine Gestation; Cæsarean Section; Death of the Mother; both Children saved.*

The *Medical Archives* condenses from the New Orleans *Journal of Medicine* the following account of an unusually interesting case which occurred in the practice of Dr. E. P. Sale, of Aberdeen, Miss.:

The case was that of a negress, in which, Dr. Moore of the same place having diagnosticated ovarian pregnancy (the woman was unmarried, and denied having had intercourse with a man) he was called in consultation, and confirming the diagnosis, and further agreeing that the woman's condition was such that death must soon take place if nothing was done, ovariotomy was decided on as affording the only hope of saving either the mother or child. The necessary arrangements having been made, the operation was accordingly performed on the 3d of March, 1870, and a living child, with the placenta, extracted, when, to their astonishment, the uterus (previously concealed by the ovarian pregnancy, and the os giving no indications of the fact) was found to be impregnated. After a hasty consultation as to whether to suspend the operation and endeavor to deliver the child *per vias naturales* or resort to hysterotomy, the latter was decided on and performed, and another living child and the placenta extracted. All clots were removed, and the wound closed and dressed with a solution of carbolic acid, and the usual treatment in such cases resorted to, but the woman died on March 7th, the fourth day after the operation, as was supposed of septicæmia. No *post mortem* was allowed. At the time of writing the report, April 15th, both children were doing well.

8.—*Treatment of Vaginismus.* By E. J. Tilt, M. D. [*Lancet* and *Practitioner.*]

Dr. Tilt deprecates the division of the vaginal sphincter for the relief of this distressing infirmity, and thinks the best mode of cure is by forcible distention. To effect this forcible distention he places the patient under the influence of chloroform, and then gradually introduces the two thumbs

into the vagina. Placing them back to back he separates them more or less, according to each particular case, and thus forcibly keeps the vagina distended for five or six minutes. He then introduces a large metal bougie, which is kept up by a T-bandage, and this may be worn with advantage for several days after the operation. Dr. Tilt considers that cases justifying a recourse to this mode of treatment are exceedingly rare, and that in most of the cases in which he has been consulted it has been a symptom of some form of uterine disease, or of vaginitis in very nervous women, and in these he has solved the vaginal spasm by curing the disease by which it was caused. Hence no kind of vaginal distention should be resorted to by the surgeon until he has convinced himself that there is no disease of the reproductive organs to account for the vaginismus.

MATERIA MEDICA.

1.—*Chloride of Ammonium a Specific in Hepatitis and Hepatic Abscess.*

Dr. Wm. Stewart (*Madras Monthly Journal Medical Science*, September, 1870) believes he has found in the chloride of ammonia a remedy of such value as to deserve the name of specific in certain hepatic diseases so common in India. He says:

Since the first of September, 1869, from which time the systematic treatment of hepatitis by chloride of ammonia first commenced (a period of nine months), thirty-one cases of the disease have been treated, either by myself or the assistant-surgeons of the battalion; and of these, six were undoubted cases of abscess of the liver, presenting the physical signs, the general symptoms, and the well-marked hectic fever, diagnostic of the disease under such circumstances. In four of the cases, the hectic fever was severe; in one especially so, and accompanied with excessive wasting of the tissues, and extreme prostration of the vital powers—patient exhaling the cadaveric odor, at times observed in low and exhausting disease with typhoid symptoms.

Hepatitis is a disease of this station, and has been the occasion of much mortality here, as elsewhere. From a statement, kindly furnished by Dr. Shelton, Principal Medical Officer, British Medical Service, I find that in the headquarters of the 24th Regiment, Rangoon, and Detachment, Port Blair, out of a total strength of 795, there were, during the year 1868, thirty-two admissions and five deaths from hepatitis. "The *post mortem* in each instance shows the cause of death to have been hepatic abscess."

During the same period (1868) in the 21st Fusileers, at Secunderabad, out of an average strength of 868, there were eighty-six admissions and six deaths from the same cause. The disease was treated on the usual expectant plan, and with a result not very satisfactory. Compare these figures with those which follow, and see how different is the result obtained under the treatment by chloride of ammonium:

Since September 1, 1869, to May 31, 1870 (a period of nine months), there have been thirty-one admissions from hepatitis at this station, out of an average strength of 608; of these, six were undoubted cases of abscess of the liver, and in several abscess was strongly suspected. All of the above were successfully treated without a single death. It is also remarkable

that, since the arrival of the battalion at this station at the end of December, 1868, up to May 31, 1870, embracing a period of seventeen months, there have been fifty-eight admissions from hepatitis, and but one death, the fatal termination in this instance furnishing negative proof corroborative of the testimony already adduced of the very great success of the chloride-of-ammonium treatment, for it is to be observed that the patient died at a period atecedent to the introduction of that practice, that dysentery of a very severe type supervened, uncontrolled by any of the remedies employed, and that the autopsy revealed the existence of abscess, which occupied almost the entire liver, the structure of which was reduced to a mere shell. The large intestine was ulcerated throughout its entire extent, and in places grangrenous.

In not one of the cases treated by chloride of ammonium was there the slightest tendency to dysentery observed.

According to the Army Medical Department Report for 1867, out of a total strength of 56,896 European troops in India, there were, during the year, 3,078 admissions from hepatitis, and 157 deaths. During the same period 368 were invalided on account of the disease, and 96 were discharged the service at Netley.

The writer insists, moreover, upon the most careful nursing, to insure absolute rest in the recumbent posture, as relapses sometimes occur from even so slight a cause as an attempt on the part of the patient to turn in bed. Regarding chronic hepatic abscess, he remarks:

In my former paper my remarks were chiefly confined to the therapeutic uses of chloride of ammonium in the primary acute stage of hepatitis and in hepatic abscess; in chronic hepatitis, however, it is equally efficacious. In short, I have found it valuable in hepatic affections of whatever form, whether depending on organic disease, or functional derangement. I have also found chronic dysentery, associated with chronic disease of the liver, yield to a few twenty-grain doses of the chloride of ammonium, after ipecacuanha and other remedies had failed; and I have before me notes of the case of a young officer, similarly affected, whose dysentery was checked after a few doses of eight grains each. In such cases from five to twenty grains may be given, dissolved in two ounces of infusion of cascarilla, twice or thrice daily, according to circumstances; and, to cover the saltish taste of the medicine, a little ext. glycyrrhizæ (say grs. v) may be added to each dose. In passive congestion of the liver from cardiac disease, I have found a few doses (grs. xx) of the medicine effect a remarkable reduction of the enlarged viscus, and afford great relief to all the symptoms; in fact, the specific action on the liver is manifested in almost all the diseases to which that organ is liable.

2.—*Quinine, Quinodine, and Cinchonine.*

Dr. J. B. Hamilton (*Indian Medical Gazette*, March 1, 1871) gives the result obtained from the use of quinine, quinodine, and cinchonine, as prophylactics against malarial fevers. He divided the troops under his care into three parts, each part to receive but one of these alkaloids. Every man took three grains of quinine, quinodine, or cinchonine, as the case might be, and such cases of malarial fever as were developed were treated with the same alkaloid as he had been taking as a

prophylactic. After giving the results of the trial, he concludes:

From the above facts it would appear that quinodine ranks highest as a prophylactic, as the men treated with it show only 7.7 per cent. of admissions.

Quinine ranks next, giving 8.7 per cent., and cinchonine undoubtedly last, showing 19.4 per cent. of admissions.

It must also be borne in mind that these men were all under exactly the same conditions, as to residence, food, clothing, exposure, night duty—in fact, three bodies of men more evenly situated in every way could not be found.

Now, as regards the immediate action of the drugs, an undoubtedly tonic effect was produced by all.

The action of quinine is so well understood, that it would be superfluous to touch on it.

Quinodine seems to act nearly in every way in a similar manner to quinine, and the cases treated with it in the ordinary way yielded as readily to the equivalent doses as they would have done if treated with quinine.

Some complaints were made of diarrhœa having been caused by it, but on investigating them I came to the conclusion that they were all due to other causes, chiefly climatic, and that, on the contrary, the number of admissions for diarrhœa was very low, being only three for the months the drug was being given in the whole battery.

Cinchonine did not give such favorable results; no doubt it has a certain amount of tonic, prophylactic, and anti-periodic power, but it was less efficacious and certain in its effects, requiring larger doses than either of the others; the paroxysms of fever returned oftener, and in many cases I had to omit it and finish the cure with ordinary doses of quinine.

In conclusion, I beg to express my opinion, founded on the experience of five rainy seasons—two at Jubbulpore, two at Hazareebagh, and one at Allahabad—of the great benefit accruing from the use of quinine (or its allied drugs) issued as a prophylactic during the months of August, September, October, and of a late wet season, November; the cases of ague are fewer, of a milder type, yield more readily to treatment, and seldom assume the remittent form.

PHYSIOLOGY.

Structure of the Glands of the Stomach. [Schultze's Archiv. für Micros. Anatom., Bd. vi.]

Prof. Heidenhaim has been recently making investigations on the structure of the gastric and peptic glands. The mucous membrane of the stomach of dogs was hardened in alcohol, then stained with carmine or aniline-blue, and examined with moderate microscopic powers. The glands are arranged singly like palisades, or in groups like the fingers of a glove, in close proximity to one another, and the orifice, neck, and body in each can be distinguished. The orifice in the grouped glands resembles the hard part of the glove, several glands opening into it, just as the fingers of the glove open into the wider hand part. This is lined by columnar epithelium. The neck or narrower portion of each tube is lined by roundish colored cells. The body is lined by two kinds of cells, one external or mar-

ginal, round, and colored, the other small, internal, and uncolored, though their nuclei sometimes become tinted. The former Prof. Heidenhaim calls investing-cells (belegzellen), the smaller uncolored ones he names chief-cells (hauptzellen). The former probably represent the peptic cells of writers. The lumen of the glands is occupied by granular dark material. He describes with full details the action of the various reagents upon the two above-mentioned forms of cells. He then gives the results of his researches on the glands during digestion. They increase in size; the chief cells become swollen, and their contents are finely granular, showing that they have absorbed more than they have secreted. The investing cells are less altered. No division or multiplication of cells was observed.

Miscellaneous and Scientific Notes.

American Medical Association.—The Twenty-second Annual Meeting of this Association was opened in Pacific Hall, San Francisco, California, May 2d, Prof. Alfred Stillé, of Philadelphia, in the chair. The meeting was called to order by Dr. Arthur Stout, of San Francisco. The president, in his annual address, called attention to the wonderful growth that had taken place within a few years in the State of California, and then proceeded to discuss the necessities of the profession in regard to a higher standard of medical education. Some agreement among the various schools was essential, in order to effect a uniform improvement in the system of instruction, so that there might be no conflicting pecuniary or other interests. The questions of quackery, of the admission of women and negroes to the profession, and the right of revoking diplomas, were severally touched upon, and the address was remarkable throughout for ability and eloquence. The committee of arrangements and credentials reported the names of accredited delegates and permanent members. A report "On Protest of Naval Surgeons," etc., by Dr. S. W. Ruschenberger, U. S. N., was read and laid on the table. That "On a National Medical School," by Dr. Francis Gurney Smith, of Pennsylvania, was received and adopted. That on "Criminal Abortion" was referred to the committee on obstetrics. That on "Medical Education" was sent in printed, by Dr. Geddings. That on "Prize Essays," by Dr. T. M. Logan, was read. The reports on the "Climatology and Epidemics" of various

States were for the most part continued till next year. That on the "Climate, etc., of California," by Dr. F. W. Hatch, was referred to the special committee on the subject. A voluntary communication on "The Operations for Stone" was referred to the Committee on Surgery. Dr. T. M. Logan, of Sacramento, chairman of the Committee on Prize Essays, reported in favor of awarding prizes as follows: First prize—to E. R. Taylor, of Sacramento, for essay upon the "Chemical Constitution of the Bile." Second prize—to Benj. Howard, M. D., of New York, for essay upon "The Direct Method of Artificial Respiration for the Treatment of Persons apparently dead from Suffocation, from Drowning, or from other Causes." The Treasurer's report showed the receipts for the year to have been $3,802; disbursements, $3,098; balance on hand, $704. The report of the Librarian, F. A. Ashford, M. D., of Washington, was read. Three hundred and thirty-nine volumes, including pamphlets, monograms, etc., composed the collection at the date of the last report, and the additional matter received during the past year has been chiefly a continuation of the medical and surgical journals. John C. Atlee, M. D., delegate to the Association of Medical Superintendents of American Institutions for the Insane, made a report which was accepted. Dr. Johnson, of Missouri, presented a report from a special committee, suggesting a plan for the elevation of medical attainments and establishment of a National Academy of Medicine. Referred to Committee on Education. Dr. Yandell, of the special committee, to whom was referred the report of Dr. Pinkney on Foreign Naval Medical Affairs, submitted at the session of the Association in 1870, presented the said report, which was referred to the Committee on Education. Dr. H. R. Storer, delegate from the American Medical Association to the Canadian Medical Association, submitted a verbal report in behalf of himself and associates. The committee on nominations made the following report: For President, D. W. Yandell, of Kentucky; first Vice-President, Thos. M. Logan, of California; second Vice-President, C. L. Ives, of Alabama; third Vice-President, R. M. Mitchell, of Alabama; fourth Vice-President, J. K. Bartlett, of Wisconsin; Assistant Secretary, D. Murray Chester; Librarian, F. A.

Ashford, Philadelphia; Treasurer, C. Weston, Philadelphia. Next place of meeting, Philadelphia. The report was unanimously adopted. The Association then took up the proposed amendment to the constitution, admitting delegates from Female Colleges, and, after a warm discussion thereon, the subject was indefinitely postponed. After the announcement of the various committees, however, the vexed question of the admission of women was again revived by Dr. Atlee, and the consequence of the angry debate that followed was one of those disgraceful exhibitions of legislative indecorum for which the Association has gained an unfortunate notoriety. The session lasted four days.

A New Vehicle for Powerful Medicines.—Dr. Th. Huseman (*Centralblatt Med. Wiss.*, No. 157) gives the result of an examination of the method of Prof. A. Almen, of Upsala, for the administration of medicines by means of the gelatinæ medicatæ in lamellis. This method has been extensively used in Sweden. Its chief virtue lies in the fact that it renders the administration of powerful medicines easy and exact. The preparation is substantially as follows: A small quantity of glue (6 grammes) is dissolved in warm water (230–260 cctm.) and then the substance in question is added. The solution is poured upon a plate of glass to solidify and dry. The stiffened mass, of the thickness of paper, is then divided into squares, each of which contains a certain dose. A slight addition of glycerine serves to make the otherwise brittle gelatinæ tough, and flexible as paper. Too much glycerine makes the gelatinæ soft and too readily moist. Accurate directions as to preparation, as well as details as to the needful apparatus, are to be found in the original paper—suffice it to add, here, that medicaments, soluble in water, as well as those insoluble, as calomel, ipecac., etc., may be given in this manner. With these latter it is only necessary, in order to obtain a complete diffusion of the drug, that the medicine be added to the solution of glue in a thick emulsion; gum-acacia is to be preferred to gum-tragacanth. The gelatinæ must not be placed dry upon the tongue, but moistened and swallowed with a gulp of water. The most important and commendable of the gelatinæ pre-

pared by Prof. Almen are: Gelatinæ morphii acetici, tartarized antimony, acetate of lead, sulphate of copper, extract. opii, opii levantici, extract. belladonnæ, extract. colocynth comp., hydrarg. chlorat. mitis, pulv. rad. ipecac., infusion ipecac., pulv. fol. digitalis, infusion digitalis, camphoræ. The gelatinæ atropini sulphurici, and extract. physostigmatis, for local application to the eye, are reported as having proved useful, but there is a lack of experience as regards the gelatinæ sinapinatæ and cantharidum for external application to the skin.

A. Monti on the Treatment of the Itch in Children.—Upon the suggestion of Froehlich, the above author instituted some experiments upon the action of copaiba-balsam on the itch of children. He in the first place verified the fact that the freshly-captured itch-insect dies in from two to three hours when placed in copaiba-balsam. The balsam produces on the skin an active redness and burning, which disappear after half an hour, and with them also the troublesome itching. After three or four inunctions, spread over one or two days, the efflorescence of the skin grows pale. No disturbance of the digestion nor of the urinary organs was noticed in any of the cases. The duration of the treatment varies between two and twelve days. The scabies nodosa, without eczema, is the most readily healed—the balsam has no influence upon eczema or upon pustules. The balsam of copaiba is cheaper than that of Peru, is to be preferred on account of its more agreeable odor, and does not stain the linen.

Monti experimented with carbolic acid, employed either in solution (one to two drachms to one pound of water) or in the form of salve, ʒj to ℥iv unguent simpl. After a preliminary washing, the carbolic acid is vigorously rubbed into the diseased parts of the skin. In scabies pustularis, poultices are used instead of the initiatory washing or baths. The redness and burning of the skin caused by the carbolic acid soon disappear. Any eczema present is speedily cured. The duration of the treatment is very short; as a rule, six to nine inunctions, in the space of two to four days, suffice; if eczema is present the treatment is somewhat protracted. This method is much to be recommended for children.—(*Centralblatt f. d. Med. Wiss.*, for April, 1871.)

Subcutaneous Injection of Stimulating Substances.—A strongly-built man became reduced, by a pneumonia of the left lower lobe of the lung, to such an extent that he was neither able to empty the overcharged bronchi, nor swallow the needful medicines and drinks. He lost consciousness, the breathing was rattling, the pulse small and frequent. Dr. Rhode injected, subcutaneously, acid. benzoic. in spir. vini rect. one to twelve, four times in intervals of $\frac{1}{4}$ hour, so that in all 0.5 gr. acid. benzoic. were employed. After the second injection an effort of coughing ensued, the pulse increased in strength, and after the lapse of three hours the patient was enabled to take nourishment and wine. The patient rapidly recovered. Dr. Rhode subsequently had repeated opportunities of making further observations upon the subcutaneous injection of stimulants. In no case were the results so striking as in the above. Rhode employed also a combination of camphor and acid. benzoic. in the following form: camphor 1.0, acid. benzoic. 1.5, spir. vini rectificatis 12.0. Although Dr. Rhode has invariably remarked a raising of the pulse in even the most exhausted patients, nevertheless, on account of the intense pain caused by the injection, he regards it called for only in those cases where the patient is unable to swallow medicines, or where the gastric mucous membrane, as after taking an irritant poison, is no longer capable of resorption.—(*Centralblatt Med. Wiss.*, No. 107.)

The Anatomy of the Spleen.—We gather the following results from the recent investigations of Dr. E. Kyber, in regard to the minute anatomy of the spleen (*Archiv f. Mikros. Anat.* vi., 540–580. *Central f. d. Med. Wiss.*, No. 16).—While a number of investigators, at whose head stand Billroth and Kölliker, ascribe to the spleen a vascular system which is closed on all sides, it is well known that W. Mueller asserts that the connection between the capillaries which proceed from the resolution of the arteries occurring in the interior of the Malpighian corpuscles, and the veins, is restored by means of a system of intermediate blood-channels, of hollow spaces, which, without possessing any proper walls, are merely bounded by the cells and fibres of the intervascular tissue of the pulp.

Kölliker entirely rejects the latter view, and ranges himself on the side of the first-named investigators. The capillary ends of the arteries open directly, terminal or parietal, at right or acute angles in the commencement of the veins. It is sometimes possible to fill the ends of the arterial vessels with the venous injection material, without the occurrence of extravasation. In injecting the arteries, the material readily passes from the arteries into the veins without the occurrence of a rupture of the walls, but one never succeeds in filling any large parts of the veins in this way. The blood moves in the spleen only in closed channels; any passage of the corpuscular element from them into the tissues is always to be regarded as a pathological occurrence. The view is confirmed, and the falseness of the opposite view of W. Mueller shown, by the study of the so-called diffused amyloid degeneration of the spleen. We can follow step by step the amyloid transformation of the parenchyma of the spleen without gaining a view in any of the stages of degeneration of the intermediate blood-channels asserted by Mueller. This same degeneration of the spleen proves further, beyond any doubt, that the parenchyma of the spleen and the lymphatic sheaths of the vessels are not to be regarded as belonging together (Schweiger, Seidel), but are two distinct tissues (Billroth, Frey), in that each by itself, as in the sago-spleen, or as in the diffused degeneration, is attacked by different and to itself peculiar kinds of amyloid degeneration.

The injection of the deep lymphatic vessels, that is, those discovered by Tomsa, as penetrating the entire organ, Dr. Kölliker succeeded in effecting only in the spleen of the horse.

Deaths from Chloroform.—In the Edinburgh Royal Infirmary, on March 3d, a patient died while under the influence of chloroform, which had been administered to facilitate the reduction of a dislocated shoulder. The patient was a strong, robust-looking man, but a *post-mortem* examination revealed a large and fatty heart. The right side was distended with black fluid blood; the left side was empty and collapsed. The *Lancet* of May 20th reports another death from chloroform, of which less than one drachm and a half had been ad-

ministered for the reduction of a dislocated tibia. The patient, a lieutenant-colonel in the British Army, was about fifty years of age. The case is reported by George Miles, M. R. C. S., Plympton, Devon. Still another death from the same cause occurred (*Lancet*, April 22d) at the Swansea Hospital, during the preparations for amputation of a leg. The patient, a mechanic, died while inhaling the chloroform, before the operation commenced.

Opium-Smoke in Tetanus.—Dr. Charles Shrimpton, of China, in a letter addressed to the *Gazette Médicale*, recommends the use of opium-smoke as a very effective remedy in tetanus. The treatment consists in the inhalation of opium-smoke. The patient smokes, through a pipe, a composition of four or five grains of crude opium mixed with tea or rose-leaves, and with a small quantity of molasses. While smoking, the patient must inhale the fumes deeply, and continue until the desired effect is produced. The narcotic influence generally lasts three or four hours, and the operation is repeated as often as the tetanic symptoms reappear—that is, about twenty days. The patient must be well fed during the intermission of the narcotism.

Transmission of Physical Defects.—At a meeting of the *Société de Biologie* (*Gazette Médicale de Paris*) M. Vulpian presented, in the name of M. Philipeaux, several observations in regard to the possibility of transmitting artificially-produced mutilations in animals. The young, born of animals whose spleen had been extracted, have always presented a normal spleen ; but a rat whose right testicle had been extracted gave three young males, two of which presented a very marked atrophy of the right testicle, while in one no trace of this organ could be detected by palpation. M. Philipeaux intends to continue his observations.

Liebreich.—This distinguished ophthalmic surgeon, who had ordered his apartments to be prepared in Paris, has changed his plans, and has succeeded in obtaining in London what was refused to him in Paris. He has been appointed Professor of Ophthalmology at St. Thomas's Hospital, notwithstanding a pretty severe opposition.

Experiments with Alkalies.—Dr. Rabuteau (*Gazette Médicale de Paris*), in experiments made upon himself, has found that, after the injection of 5 grammes of bicarbonate of potassa a day, the urea decreased from 30 grammes to 25 (20 per cent.). Thus alkalines appear to diminish combustion, and the experimenter believes them of little use in glycosuria. In the above doses they increased the appetite, but did not produce any diuretic effect. Dr. Brown-Séquard believes the treatment by Vichy-water, though it increases the appetite at first, often produces great debility.

Resignation of Mr. Paget.—In consequence of recent illness and a tardy convalescence, this distinguished surgeon has found it necessary to resign his position in St. Bartholomew's Hospital, London. In the *Lancet* of June 3d, we find a clinical lecture by Mr. Paget, on dissection poisons, in which he takes his own case as a test. He was poisoned February 4th, while making an examination of a patient who died after lithotomy, of diseases of pyæmial origin. His hands were soaked in the pleuritic fluid, and the poison was absorbed through the skin, for there was no scratch or abrasion whatever. Mr. Callender is spoken of as Mr. Paget's probable successor.

Pennsylvania Hospital Changes.—We learn from the *Medical Times* that Dr. Agnew has resigned his position as one of the attending surgeons to this hospital, and that Dr. Richard J. Levis has been elected in his place. Dr. Agnew will continue to deliver clinical lectures, as Professor of Surgery, at the University of Pennsylvania.

Oppolzer's Successor.—The vacancy caused in the University of Vienna by the death of Oppolzer has been filled by the election to his chair of Prof. Bamberger, of Würzburg, who will begin his lectures in the autumn.

Extraordinary Lactation.—Dr. E. Raguer, of Barcelona, Spain, reports (*Independencia Médica*) the following curious case: The subject was a beggar-woman, aged forty-eight. Married at sixteen, she had a child the following year, which she nursed for fourteen months. Four or five years after she

gave birth to a stillborn child; after this last confinement the secretion of milk lasted for a few months, after which it disappeared. After a period of twenty years from that time she called upon Dr. Raguer for advice. She complained of dull pains all over the body, accompanied by an abundant secretion of milk in the left breast only. The patient was sent to the Vich Hospital, where she soon got well. Ten years later, secretion of milk occurred in the same breast. Diuretics were then prescribed. Finally, three months after, she called again with both breasts full of milk. The physical qualities of this milk appeared normal, although it was not chemically analyzed. The general pains she experienced the first time were then very much increased; she appeared puny and exhausted, but without fever. She menstruated until the forty-sixth year, and was subject to an abundant leucorrhœa, still persisting.

Diseases of the Nervous System.—From the First Annual Report of the Board of Trustees of the New York State Hospital for Diseases of the Nervous System, we learn that from July 1, 1870, to April 1, 1871, a total of 194 patients were treated in this institution. Of this number Dr. T. M. B. Cross, resident physician, reports 100 cured, 10 discharged as incurable, 14 transferred to other institutions, and 69 remaining under treatment. One death took place, in consequence of direct injury, for which the patient was under treatment. Prof. William A. Hammond, physician-in-chief, regrets in his report that, for want of funds, the department for the reception of in-patients has not been completed.

Cundurango.—We publish elsewhere an interesting report, furnished by Dr. D. W. Bliss, of Washington, of recent experiments with this new South American remedy. It is probably too early to form any definite opinion of its merits, but it certainly appears to possess remarkable therapeutic powers. It is to be hoped that the supply will soon be abundant enough to permit the profession to give it a fair and extensive trial.

A German Pharmacopœia.—A committee of twelve members is to be appointed to frame a Pharmacopœia for the entire German Confederation. The committee will be empowered

to call scientific men to their aid, and it is understood that the new work will be ready by the 1st of January, 1872.

Spencer Wells on Anæsthetics.—In a communication to the *Lancet*, T. Spencer Wells states that he has employed chloromethyl, or bichloride of methylene, in about 180 cases of ovariotomy, and in more than 75 other severe operations. In some cases insensibility was maintained from forty-five minutes to an hour, or more, and yet he has never felt the least uneasiness during the administration of the anæsthetic. Subsequent vomiting he has been found to be the exception, while with chloroform it has been the rule. He had employed chloromethyl in thirty-two successive cases of ovariotomy in private practice, without a single death. In some cases less than two drachms were used, and very rarely more than six drachms. Mr. Wells has now performed ovariotomy in 417 cases.

Insanity and Intellect.—The *Medical Times and Gazette* says that there is no country in which madness is so rare as in Turkey, where the people are of all others the most sluggish intellectually; while in England, Germany, and other countries, distinguished for intellectual activity, the number of suicides from insanity is greater than anywhere else.

A Successful Woman.—A volume on "Progressive Atrophy of Muscle" has been issued by Miss Frances Elizabeth Morgan, M. D., of the University of Zurich. The work is highly spoken of by a German medical journal.

Cholera in Russia.—The inhabitants of St. Petersburg are still suffering severely from cholera, which has also made its appearance in Moscow. The sanitary condition of both cities is said to be extremely bad.

Quinine in Small-Pox.—Dr. Coze (*Gaz. Méd. de Strasbourg*, No. 24) recommends the following treatment, which he regards as almost equal to vaccination. It consists in the administration of s. quinine from the moment the patient feels the first prodromata of small-pox. The patient must be immediately put to bed, and at half-hour intervals take three to four doses

of 25 ctgr. quinine. If the illness has not disappeared the next morning, the medicine is to be repeated in the same manner. It generally, then, either fails to come to the eruption, or at most a few scattered pocks appear, which do not hinder the patient from attending to his trade.

Graefe's Successor.—Prof. Schweigger, a pupil of the late eminent ophthalmologist, has just been appointed to succeed Graefe at the Charité Hospital of Berlin. Dr. Schweigger has hitherto occupied a chair in Zurich.

Health of the Pope.—The Pope is said to be suffering from what his physicians give out as "ascending paralysis." He continues to receive visitors, but his general prostration of strength is admitted by the prelates; and, according to the latest accounts, he grows feverish every night, and is weak and desponding during the day.

The Simpson Memorial.—The sum of twenty-five thousand dollars has already been subscribed in Great Britain toward the fund for a memorial to the late Sir J. Y. Simpson. It is proposed that the memorial shall consist of a great hospital, a monument in Edinburgh, and a bust in Westminster Abbey.

Medicine and Journalism.—At the last annual dinner of the Newspaper Press Fund, Lord Carnarvon made the following remarks on the respective duties of the physician and the journalist:

I have come to this question within myself, whether the man of medicine or the man of the press is the harder worked: the man of medicine, who devotes his whole life to the charitable objects of his profession, and who cannot call the night his own; or the man of the press, whose work is so hard and unceasing, and upon whose accuracy, both of word and of fact, the greatest issues depend, and moreover, who turns his night into day, but not, as in the old Egyptian fable, for his own gratification. His lordship declined to adjudicate between the two professions; and, in truth, it is next to impossible to do so. Both tax the energies of their members to the utmost —both make heavy draughts on the mind as well as the body; but it seemed to him that the medical man had over the journalist certain advantages which probably explain his undoubt

edly greater longevity. In the first place, his duty is better defined; the subjects of his daily concern are much less varied than the journalist's. The mind, therefore, works easier, and the tax on its productiveness is less. In the next place, he comes to it with something like special preparation; in the majority of cases, the journalist begins his career with small special, and sometimes with scarcely more general, culture. He has to educate himself for his profession as he works at it, and consequently wastes much strength unnecessarily. The medical man's habits are active; those of the journalist sedentary. The emotions which controversy arouses are much less frequently called into play in the former than in the latter profession; excitement and work performed under it belong much more to the journalist's than to the medical man's life.

Michel's Method of Removing Tumors.—The *Lancet* gives the following details of M. Michel's process for the removal of external tumors:

The preparation used in all cases where the tumor can be reached externally is made in the following way: Asbestos, as soft and free from grit as possible, is reduced by rubbing between the hands to the finest possible fleecy powder. It is then mixed thoroughly with three times its own weight of strong sulphuric acid (SO_3HO), and worked into the desired shape with a silver or gold spatula. Mr. Bell remarks that the practical working of this powerful but simple escharotic is very remarkable; it destroys rapidly and completely whatever tissues lie directly beneath it, and in doing so neither causes the extreme pain which might naturally be expected, nor the local inflammation and general feverish symptoms which render similar applications undesirable.

In its application it is requisite that the patient should be so placed that the surface of the tumor is level. The adjoining parts of the skin are to be protected by a broad circle of collodion and a thick pad of soft linen. Nearly the whole surface of the tumor is to be then covered with a layer of asbestos and acid, the thickness of the latter being about half an inch for a tumor the size of a hen's egg; and, to insure that the contact is uniform, the surface of the asbestos is to be covered with sovereigns. The skin beneath the mass is rapidly destroyed, a very narrow white circle marking the separation between the dead and living skin. The pulse remains quiet. The patient complains of considerable pain while the skin is being penetrated; it is not unbearable, however, and becomes much lessened after the first twenty minutes. Soon a slight

oozing appears at some point from beneath the mass, the careful stopping up of which requires the undivided attention of the operator or experienced nurse for some hours.

It is claimed for this process—1. That the shock of a surgical operation is entirely avoided. 2. That besides the tumor very little of the surrounding parts is injured or removed. And 3. That a malignant tumor when removed by means of the escharotic is not so rapidly recurrent as when it is excised.

The Penalties of Indigestion.—Given, therefore, a stomach, strong yet sensitive, having a still voice like conscience, and bowels delicate and impressionable—is it not fair that Nature makes us suffer through these organs, when we insult her so grossly by irritating them with bad food, ill-cooked, half masticated, and wholly unfit for the purposes of nutrition? We deserve to suffer, and richly too. Sometimes we pour chemical compounds into the beautiful laboratory of Nature, and call them stimulants, but our chemistry is ill-applied. Stimulants they are in one sense, for they excite the coats of the stomach and bowels into a state of chronic inflammation. But this is not the whole sum of our folly. Barely satisfied with the mischief already worked by bad food and villanous drink, we crown all by vexing the unoffending liver, "more sinned against than sinning," with blue pill, and the already wounded bowels with black draught. My gall rises as I write. Is it wonderful that we suffer? Is it surprising that we fall sick? How about that pain behind the shoulders, as if somebody had knocked you down with a paving-stone; and that pain in the stomach, as if the same assailant had, in Irish fashion, trampled on you when you were down? Did not that tough, leathery fragment, served as a steak, and chewed like rhinoceros-hide, play some part in originating these pains? and did not the waiter, putting a decanter before you with an inky fluid in it, call it wine? Port wine I think he called it, and misquoted the year of its birth by a quarter of a century. And did you not pour this liquid fire over the inflammatory steak below, swallowed but not digested? And then, did you not, rushing wildly away to your office, bury yourself in your books? and was it a wonder that the devil of indigestion, the demon of dyspepsia, piped to his own?—*E. B. Shuldham, M. D., in the Food Journal.*

New Fluid for the Preservation of Microscopic Preparations.—Max Schultze, in the last part of his *Archiv für Mikroscopik Anatomie*, observes that, of all fluids now in use for the preservation of microscopical specimens, glycerine, either pure or

mixed with other reagents, is most widely employed. This substance, though possessing the peculiarity of rendering many tissues transparent, yet unites with fats, and so modifies the differences of refraction occasioned by the presence of fat. Since the introduction of perosmic acid a new disadvantage attaches to glycerine—namely, that, if the least trace of the acid remains, the glycerine becomes black, especially around the preparation, and there are no means of removing perosmic acid completely; washing, even when continued for days, being inefficient. Under these circumstances, M. Schultze has been engaged in seeking for a fluid which might replace glycerine, and has, he thinks, discovered one in a nearly concentrated watery solution of *acetate of potash*. According to Dippel, through whose work Schultze first became acquainted with it, it was originally employed by Sanio for the investigation of vegetable structures in place of chloride of calcium; and Dippel found it serviceable also for preserving animal tissues. Schultze applied the fluid in the same way as glycerine, a drop being allowed to flow over the specimen after it has been prepared in water or serum, without raising the cover. After the lapse of twenty-four hours the preparation is luted down. As the fluid neither dries up nor crystallizes out, the specimens may long be preserved in it. M. Schultze states that the solution has now been in use for two years in his laboratory, and no disadvantages have been found to attach to it, while it possesses all the advantages of glycerine.—*Lancet.*

Remarkable Case of Pseudo-Hermaphroditism. — Dr. Funk communicates to the *Gesellschaft der Aerzte, Wien*, the following case: The patient, aged thirty-three, married since 1858, powerfully built, with muscles, bones, and face, following a man's type. Her hair was long, but she had mustaches and whiskers, mammæ small and covered with hair. At the age of seventeen there was, for two days only, a slight discharge of blood from the vagina, with previous pain in the stomach, but since that time no trace of either true or vicarious menstruation, nor any periodically returning pain in the abdomen.

The *clitoris* was very much enlarged, and looked like the penis of a man, suffering from hypospadias. It was provided with a glans and prepuce, and measured, when erect, from the point of the glans to its attachment to the symphysis pubis, two inches four lines. The external orifice of the urethra was very far backward, was not visible, but could easily be felt.

The *vagina* was separated from the clitoris by a tolerably wide interval, was very narrow, and at its anterior extremity

was a forked slit-like protuberance of two lines to half an inch breadth.

At the upper end of the vagina were several deep *cul-de-sacs*, three to six lines in depth, into one of which reached the vaginal portion of the uterus, of the size of a pea.

The uterine sound passed into the cavity of the uterus for two and a half inches, and, as the instrument could easily be felt through the abdominal wall, it was concluded the walls of the uterus were very thin. The form of the lower extremities, knees, and calves of the legs, were like those of a man.

Tetanus cured with Hydrate of Chloral.—Dr. Dorigo has published, in the *Gaz. Med. di Padova* of December 17th last, the case of a boy of thirteen, who suffered from tetanus in consequence of a wound of the sole of the foot. The final recovery took place on the fifty-fourth day, the average daily dose having been ninety grains. When the narcotic effect became weak, the chloral was immediately given again. Dr. Grandisso-Silvestri mentions, in the same paper, another case, that of a girl eight years old, who had tetanic attacks after a lacerated wound of the middle finger of the right hand. She soon recovered, after having ingested about half an ounce of chloral in five days. Dr. Bennasson, of Tunis, has also communicated to the *Imparziale*, of Florence (February 16, 1871), the successful case of a boy, aged thirteen, who was seized with tetanus in consequence of a nail running into his foot. The treatment lasted thirty-five days, about five ounces of chloral being used altogether.—*Lancet.*

The Value of Gelatine as Food.—Mr. W. B. Tegetmeier, in the *Food Journal*, argues against the commonly-received opinion among physiologists of the innutritious quality of gelatine. Quoting the "Practical Dietary" of Dr. Edward Smith, he says:

My own experiments have proved that gelatine, like albumen, is transformed within the system, and leaves the body as urea, and hence it must have played its part in nutrition; but whether its nutritive value is quite equal to that of albumen, is another question. I believe gelatine to be a valuable food, and every one knows that, with the addition of wine and other substances, it is a very agreeable one. It is, however, very probable that it is not an economical food as it is ordinarily prepared, but it may be cheaply obtained in soup from bones.

I now come to the second so-called argument by which the uselessness of gelatine is attempted to be maintained. It is

said that an animal fed on gelatine dies rapidly of starvation and inanition. This is perfectly true; but the fact is, that no simple substance given alone will support life. The most nutritive materials, such as albumen, fibrine, gluten—to say nothing of such substances as starch or sugar—all equally fail to support life when given alone. Good wheaten bread will support life any length of time; but separate the starch, gluten, and other constituents, and give them singly, and, if the argument above adduced holds good, you could prove each of these substances to be totally without value as food, as neither will support life when used alone.

I believe that this false opinion respecting the valueless character of gelatine arose from some experiments on the feeding of convicts in some of the French prisons. They were supplied with a very small quantity of gelatine in place of other articles of food, and soon showed symptoms of starvation. The fact that dogs, though they die rapidly when fed on perfectly pure gelatine, will live any length of time if kept on soft bones, which consist almost exclusively of gelatine and bone earth, is a convincing proof that the gelatine is a valuable article of diet.

Although I believe that no amount of preaching on the part of dabblers in physiology would controvert the practical experience of mankind, and abolish the use of mock turtle, jellies, and other gelatinous articles of diet, I am anxious to show that these absurd views are not held by the highest authorities, and that the value of gelatine, although it may be denied by some, is fully maintained by our best scientific writers.

Rare Medical Eloquence.—In a paper read before the Tennessee State Medical Society, by Dr. C. C. Abernathy, we find the following grandiloquent tribute to bloodletting:

I regard the almost general abandonment of the lancet as a great public calamity. I believe that untold numbers of precious lives have been lost for want of timely and judicious bloodletting, and myriads more are doomed to fill premature graves, unless we retrace our steps, and start anew in the right direction. In my humble opinion, it were well that we imitate the example of Armstrong, Eberle, Chapman, Stokes, Physic, Wood, and other great lights of the profession, in doing homage to this time-honored and reliable remedy—a remedy which, crowned with laurels of triumph on thousands of hotly-contested fields, is still destined (I fondly trust) to march proudly, confidently forward in her glorious mission of restoration, bearing in her regal train countless votaries—mothers, who burn incense upon her altars in commemoration of precious little ones rescued by her benign influence; husbands, who sing

anthems of praise in her honor, while they fondly embrace the sharers of their joys and sorrows, and signalize them as trophies, which she has promptly restored to health and beauty; while matron and maiden, old and young, all vie in doing her such honor as none save the meritorious and truthful deserve. Beholding disease, in her protean forms, attacking, with relentless fury the citadel of life, she speaks, and, like Joshua of old, is obeyed—she cries, "Peace, be still," and the troubled waters are quieted.

A Treble Amputation.—Dr. Marten, of Horde, Germany, relates in the *Allg. Cent. Zeit.*, of Berlin (March 25, 1871), the case of a girl, aged ten years, who was run over by a railway train. The right hand, the left thigh, and the right knee were completely crushed. The surgeon at once amputated the right forearm, the left and the right thigh, the patient being under the influence of chloroform. Very little blood was lost. In three months all was cicatrized, after some trouble with conical stumps, and a little slough from crushing. On the patient's sacrum a small tumor was found, which was no other than a *cured spina bifida.* A little bed-sore had formed here, which, however, was soon closed. The child, being in good health, was given an artificial arm. She usually managed to glide along the floor of the ward, and was just going to have casts taken for artificial lower extremities, when she unfortunately took the hæmorrhagic small-pox, and died in three days, about five months after the accident.

Spoon-Feeding.—Dr. Fürst has published a pamphlet on this subject in Leipsic, wherein he gives good advice to mothers. To judge of the success of this kind of feeding, the author gives the following criteria: At birth the child weighs from about six pounds and a quarter to eight pounds, the first for girls, the second for boys. During the first three days the infant loses about four ounces, but recovers its original weight about the ninth day. The child should, in the first four months, increase from 300 to 375 grains per diem, and later only from 150 to 225 grains. At twelve months old a boy should weigh twenty pounds, and a girl about eighteen pounds and a half. If the child is far below the averages just mentioned, the assistance of a medical man should be requested.

Pirogoff on German Army Surgery.—This eminent surgeon was intrusted, during the Franco-German War, with the task of visiting the seat of hostilities in the name of the Russian Association for Help to the Sick and Wounded. The mission

was fulfilled in a most meritorious manner; and a short time ago Dr. Pirogoff presented a report to the above-named Association. In this document he renders full justice to the zeal and skill of the German military surgeons; but points out that the immediate care of the wounded on the field of battle is extremely deficient. In fact, the Russian surgeon states plainly, and we think justly, that the system of help to the wounded, during action, has not kept pace with the increased precision and destructive power of the weapons used in modern times.—*Lancet.*

Yellow Fever in Buenos Ayres.—According to the latest advices, the fever in Buenos Ayres was rapidly declining, and no additional medical men were needed. The ravages of the disease have been fearful. Out of a population of 180,000 not more than 25,000 dared to remain in the city, and it was at one time impossible to assemble a quorum of the provincial authorities for the adoption of necessary sanitary measures. A local journal gives the following account of scenes in the city when the fever was at its worst:

On Easter Monday, April 10th, the plague reached its climax. Five hundred and forty "boletas" for interment were issued between sunrise and sunset; the grave-diggers toiled on by the light of lanterns, and more than 1,000 bodies were interred on that day. Here it is worth relating that of 360 grave-diggers employed, not one died of fever. No pen can describe the aspect of Buenos Ayres on this mournful day. Hearses and coffins passed you every moment. The shops were closed, and bore the impressive notice, "Closed till the plague is over." Even the tower clock of the Cabildo had run down, as if there was no one to wind it up. Notices on the street corners called for policemen, the force having dwindled down from death and desertion. Out of 130 doctors only 18 were surviving on the 30th of April. During Holy Week, gloom and desolation reigned throughout the city. The streets were silent and deserted, except where a hearse appeared, followed by a solitary coach. From nearly every door a piece of crape hung. The windows of the houses were open, sometimes also the doors, but there was no sign of life within. The sun shone brightly, but the air was heavy with the odor of death. No carts were in the streets, no carriages on the stands, no porters or laborers at work, no sound of children's voices, not even the dog's bark to break the awful silence. In the Calle Florida, the most fashionable of our

streets, you might have fired grapeshot at noonday without hitting any one. In the south end you might have walked through many of the streets without meeting a living being. The houses were all open, the furniture untouched, for even that was supposed to be infected. In a word, the city was like a ship abandoned at sea.

Destruction of Brain without Paralysis.—The following singular case, taken from a French journal, is reported in the *Lancet:*

A man, aged thirty-two, was struck, from a height of 25 yards, by a heavy pail, which shattered the skull, and drove out brain-substance. The loss of splinters and cerebral matter for the next few days was very considerable. The mind remained clear, and the limbs could be freely moved. No notable change occurred until the sixteenth day after the accident, when the patient died of exhaustion. The right anterior lobe was almost entirely gone, and the middle lobe, on the same side, was found compressed by a flattened and hardened clot. M. Letenneur, the patient's surgeon, does not say whether the man had any difficulty in articulating. This is an omission much to be regretted.

Local Anæsthesia.—Dr. Spessa states in the *Bulletin des Sc. Méd.* (Italy) that he has succeeded in preventing pain during the slitting of a fistulous tract, by injecting a solution of morphia into the tract before cutting. The same author had occasion to touch the vulvar vegetations of a girl with butter of antimony: the pain was very acute, but disappeared on the part being brushed over with a solution of morphia. A boy of fifteen, suffering from hip-joint disease, required an issue over and behind the great trochanter. An injection of morphine was first made over the region, and Vienna paste applied, which latter remained about eight minutes. The paste did not give any pain. Dr. Spessa states that he would be glad to hear that a fair trial has been given to this mode of using morphia.—*Lancet.*

Pennsylvania State Medical Society.—The annual meeting of this Society was held in Williamsport on the 14th, 15th, and, 16th ultimo. The following resolution was rescinded by a vote of 55 against 45: That it is the sense of this Society, that members of the regular profession cannot, consistently with sound medical ethics, consult or hold professional intercourse

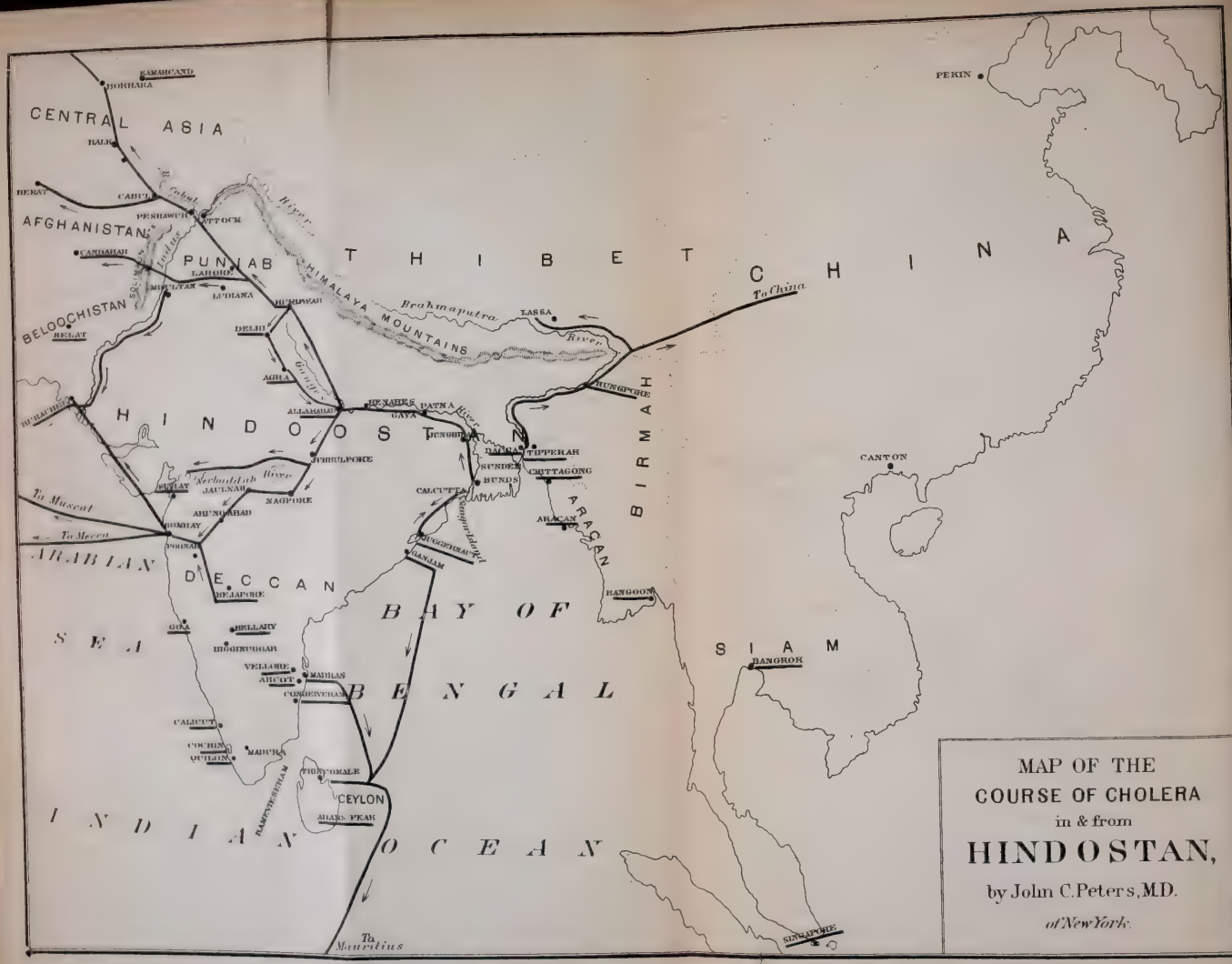
with the professors or graduates of female medical colleges, as at present constituted, inasmuch as some of the professors are irregular practitioners, and all of their colleges are ineligible to representation in the American Medical Association.

The officers elected for the year 1872 are the following: President, J. S. Crawford, M. D., Williamsport; Vice-Presidents, W. B. Gillett, M. D., Franklin; H. De la Cossett, M. D., Mercer; J. F. Treichler, M. D., McKeansburg; W. L. Richardson, M. D. Permanent Secretary, W. B. Atkinson, M. D., Philadelphia; Assistant Secretary, J. F. Davis, M. D., Franklin; Corresponding Secretary, L. Turnbull, M. D., Philadelphia; Treasurer, A. H. Fish, M. D., Philadelphia. Place of next annual meeting, Franklin.

A Peculiar Nervous Affection.—Dr. Fieber, of Vienna (*Centralblatt*, May 6th), thus alludes to a peculiar condition of the nervous system, to which he first called attention: "At one of the last meetings of the Vienna Academy of Sciences, I read a communication concerning a hitherto unknown affection of the nervous system which I first observed in my division of the General Hospital. It is characterized by an impossibility of executing moderately fast movements through the agency of the will, while extremely slow or very rapid movements can be executed without any obstacle."

Obituary.

We have to chronicle with much regret the death of Prof. Oppolzer, which took place in Vienna, April 16th. This distinguished physician and clinical teacher was born in Gratzen, Bohemia, in 1808. He began practice in Prague in 1838, and in 1841 was made Professor in the Medical Clinique of the Prague Hospital. Seven years later he was appointed Clinical Professor in Leipsic, and in 1856 was called to fill the same position in Vienna. He enjoyed a high popularity as a teacher, and spent several hours daily in his wards, besides attending to a very extensive private practice. He leaves one son, who is Professor of Astronomy in the Vienna University. His death was caused by typhus fever, of which he made the diagnosis himself before the appearance of the eruption.



MAP OF THE
COURSE OF CHOLERA
in & from
HINDOSTAN,
by John C. Peters, M.D.
of New York.

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Original Communications.

ART. I.—*On the Origin and Travels of Asiatic Cholera.* By JOHN C. PETERS, M. D.

THE larger half of McNamara's great book [1] on cholera is taken up with the discussion of the geographical distribution of cholera, and the author arrives at the now well-known conclusion that every outbreak of the disease beyond the confines of British India may be traced back to Hindostan, through a continuous chain of human beings affected with the disease, or through water contaminated, or articles stained with their dejecta.

He has arrived at this opinion after the examination of nearly three hundred thick volumes of manuscript reports which have been sent in by officers of the Bengal service to the Medical Board. This great labor was absolutely necessary, as the Board had not published any thing officially from 1817 to 1861. With the aid of McNamara and our own investigations, we are now able to give an almost complete history of the origin and travels of cholera; although we are surprised, at the outset, at the very slight attention which has been paid

[1] A Treatise on Asiatic Cholera, by C. McNamara. Calcutta, 1869, pp. 527.

by McNamara to those huge pilgrimages which are annually made in all parts of India, and which, together with the movements of merchants, and the march of armies, form the most ready means for the distribution of the disease.

First, as to the origin of cholera, we are driven back on British India as the only country in the world having the unenviable reputation of being the abode of endemic cholera; for none can deny the fact that it is endemic in Calcutta, where the lowest number of deaths from it per year since 1841 was 2,502, the highest 6,417. In Madras the lowest number of deaths in one year was 574, the highest 3,635; in Bombay the deaths from cholera, among from 6,000 to 21,000 white troops, have varied from 4 in one year to 1,085, i. e., from 1840 to 1868; among 26,000 to 47,000 native troops, from 4 to 190 per year; among 5,000 to 8,000 prisoners, from 1 to 203 per year.

The principal cause of cholera in India is the filthy condition of the native towns and villages; these consist of a mass of huts constructed without any plan or arrangement, without roads or drains, ill ventilated, and never cleaned. Most of the native villages and towns are the abode of misery and filth, and the nurseries of sickness and disease. They abound in green, slimy, stagnant ponds, full of putrid vegetable and animal matter in a state of decomposition, whose bubbling surfaces exhale, under a tropical sun, noxious gases, poisoning the atmosphere, and spreading around disease and death (p. 281).

"These ponds supply the natives with all their water for domestic purposes, and are also the receptacles of their filth. Even the artificial tanks are fed with water from the drains that ramify over the villages, and carry out the sewage of the huts into them.

"The entrances to the villages are many, but not easily discoverable; while the paths through them are so narrow and tortuous, that it is difficult for a stranger to find his way through them. The huts are huddled together in masses, and pushed up to the very edge of the ponds or tanks; their projecting eaves often meet together, while the intervening spaces, impervious to the rays of the sun, are converted into privies

and necessaries, which are used by both sexes in common. Pools of liquid filth, often covering 150,000 square feet, by actual measurement, are found in some of these villages. This filthy pool- or tank-water is also used by the natives to dilute the milk which is sold for public consumption.

"None of these villages possess a single road through which the smallest cart can pass to remove the filth, which is all thrown out-of-doors. It is also the practice of all the natives, rich and poor, to defecate upon the soil around their dwellings; there is no such thing as a pump in all India, and all their drinking-water is drawn from the large ponds, or pools, or tanks, or from open wells, and is always carried about in leather bags, made of sheepskin, which can never be properly cleansed, and are often in constant use for years.

"From the frequent heavy down-pours of rain which occur from time to time, it is easy to imagine how frequently the tanks containing the supplies of drinking-water must be contaminated with all manner of impurities which are then washed into them from the surrounding filthy soil."

Under Dr. McNamara's own observation he had the most positive evidence that fresh cholera dejecta had found their way into a vessel of drinking-water, and were swallowed by nineteen persons, who all remained well during the day; but one was seized with cholera next morning; the remainder of the party passed through the second day perfectly well, but two more were attacked with cholera on the second morning; all the others continued in good health till sunrise of the third day, when two more cases of cholera occurred. This was the last of the disease, as the other fourteen men escaped absolutely free from the slightest *malaise*, diarrhœa, or cholera (p. 197).

"This contaminated water was once, and only once, partaken of by nineteen healthy men, of whom five were attacked with cholera in seventy-two hours, the others remaining well.

"This cause of the distribution of cholera frequently arises in India, for we have seen that the natives invariably defecate if possible on the soil immediately around their dwellings. Then if a man is seized with cholera he will pass his evacuations so long as he can crawl outside his hut; or if attacked on the high-road he will generally stagger on till he gets near

some well or tank from which he can get water to quench his thirst. Under like circumstances, as he grows worse, his cotton garments will become soiled. If he gets better or recovers, he wades into the tank up to his middle; then takes off and washes his garments, which he merely wrings out, and then puts on wet again. While this is going on, as a rule, some man or woman may be seen, not far off, filling an earthen pot or skin full of this foul water, for drinking, cooking, or other domestic purposes.

"Or if the patient is taken sick in his own house, he is placed in the smallest and closest apartment; a large fire is lighted, and as many people, friends and relatives, as the room will hold, assemble and squat around him for the purpose of praying. There is seldom or ever any attempt to administer remedies, and the patient is vomiting and defecating all the while. The fomites of the disease are necessarily carried off by the visitors, and, in three or four days, five or six more cases occur, and so on daily until it runs through the whole village.

"If a sufficient quantity of cholera dejecta be mixed with water, in tall glass vessels, so as to make the mixture slightly opalescent, it will, if stood in the sun, be in the vibrio-stage of decomposition in twenty-four hours, when the surface of the fluid will be covered with large vibriones; the same will be the case on the second day; but on the third day, ciliated infusoria will have appeared, and about the eighth day, or sooner, bubbles of gas will rise to the surface, and the sides of the glass will be found covered with confervoid growths.

"This contaminated water is certainly poisonous during the vibrio-stage of decomposition, and will certainly cause cholera in at least five out of nineteen persons who partake of it; but it may be drunk with absolute impunity after the bubbles of air have commenced to form in it, and when the confervoid growths have taken the place of most of the ciliated infusoria" (p. 397).

"In the vibrio-stage the fluid is alkaline and the molecular particles of the organic material are in active movement. If we render this alkaline fluid acid by the addition of sulphate of iron, the infusoria and molecular action will be in-

stantly destroyed. In fact, any substance which renders the alvine flux of cholera acid will destroy its specific powers at once. This explains the exemption of certain persons subjected to the influence of cholera-stuff when swallowed. If the organic matters of the dejecta become mixed with healthy gastric juice, the molecular changes are at once suspended, and the organic cholera-matter is digested by the gastric juice. Supposing, therefore, that water, containing cholera-matter, reaches the stomach of a healthy man during the process of digestion, the chances are that the acid of his stomach will destroy or so lessen its deadly action that he will escape entirely, or with a slight diarrhœa, or cholerine. But if he swallows the same water some hours after taking food, when the stomach is empty and its reaction alkaline, then the cholera-matter will set up its destructive changes in the epithelium of the stomach, which action speedily extends to the intestines, so that a robust and healthy person may easily and quickly succumb to the disease. Or, if more water is swallowed than the stomach will hold, the excess will pass at once to the small intestines, and, their contents being alkaline, the specific action of cholera-matter will at once take place" (p. 402).

"Hence persons with weak digestions, those suffering from depression of the nervous force, whether following fatigue, or a debauch, are especially apt to be attacked. Hence the poor of large towns who are ill fed, and who suffer from a want of a healthy acid secretion from the gastric walls, are especially liable to the disease. Hard drinkers increase their risk by drinking large quantities of water after a debauch, to quench their thirst; they become feverish and loathe their food; their stomachs no longer contain their healthy acid secretions, and their thirst is great. Thus, sailors often arrive at Calcutta in splendid health, get upon a spree, drink a lot of filthy, Hooghly River water, which is always more or less contaminated with cholera dejecta, and may be dead in twenty-four hours" (p. 403).

"Or, if cholera dejecta are cast upon dry ground, and no rain occurs, then a high wind may arise driving clouds of cholera-dust here and there, so that it is very possible that in a few instances, and among some people, sufficient cholera-matter, in

fine powder, may be lodged in their mouths and noses, and, adhering to the alkaline mucus of these cavities, may proliferate and be swallowed down with their saliva, drinks, or food" (p. 425).

In the same way washerwomen or persons engaged with the clothes of cholera-patients may contract the disease by the dry cholera-dust from the soiled clothes being disseminated in the air. Cholera may thus be carried from place to place by means of soiled clothing, but a wide-spread epidemic outburst of the disease can only arise through the drinking-water of the place becoming contaminated with these or other cholera-matters.

McNamara entirely ignores all other causes or combination of causes as capable of producing this disease (p. 420).

It seems to him absurd to look to epidemic influences as governing the spread of cholera over the earth, when we now know what the real cause of the disease is.

He denies the influence of the winds, especially the southwest monsoon, in India, upon which Dr. Bryden lays so much stress, except in an indirect way, as the cause of the dissemination of cholera. The southwest monsoon brings with it moisture, which is a necessary element for the development of the disease, but more especially because it is before this wind that the large fleets of country boats move up the Ganges, conveying men and goods from the southern home of endemic cholera, to be disseminated over the upper provinces of India. Thus the disease springs up, not only in the great cities on the Ganges at which these boats stop, but it also finally appears in the large towns on the Jumna, which river stands in the same relation to the Ganges that the Missouri does to the Mississippi.

The great city of Mirzapoor stands in the same relation to the upper Ganges and Jumna River that St. Louis does to the Ohio and Mississippi, and is probably second to none in India in importance as regards cholera; for it is the chief commercial depot for merchandise passing to and from Bengal, and from Central India and the northwest provinces. It is to Mirzapoor that the majority of country boats from Dacca and Calcutta proceed; here they disembark their cargoes, and the

goods are carried away into the central provinces and all over the neighboring districts. The Mabawareh merchants flock to this town in large numbers, and thence scatter themselves all over India. We have in these details a repetition of the old story—cholera progressing with man along the great high-roads upon which he travels, spreading no faster than he moves, and being generated in wet and hot weather. No sooner do the rains cease and the dry west winds of the upper provinces of Hindostan set it, at the latter end of September or early in October, than cholera begins to decline over the north-west toward which it had been constantly travelling up from the southeast ever since April.

With the exception of the great fair at Hurdwar, McNamara pays far too little attention to the vast pilgrimages which take place in every part of Hindostan, and which do so much toward originating the disease, and far more toward scattering it in every directon.

Thus, low down on the southeast coast of Hindostan, the sacred island of Ramisseram is situated, between it and the island of Ceylon. Bands of pilgrims come to it from the southern provinces of Central India, collecting from distant stations in bands more or less numerous, but sometimes amounting to thousands. Many of these, poor, ill fed, and diseased, start on their tedious journey some 1,500 to 2,000 miles. The miserable caravans slowly wend their way along the grand trunk-roads of Southern India, visiting the sacred shrines of Trichinopoly; weary and exhausted they still pass on, till at length their courage is revived by the longed-for sight of the sacred island of Ramisseram; for visits to this island, and bathing in the sacred waters where the two seas mingle, are supposed to free the pilgrims from all sin, and give a sure passport to a happy immortality. The population of the island is less than 5,000, but more than 130,000 pilgrims arrive there annually to worship. To this a large addition must be made for those who have failed to reach the goal; the hearts of many have failed them; the money of others has fallen short, and death has laid many low, for thousands of graves, unseen because unmarked, exist on the trunk-road of the pilgrims.

A great ablution is performed at the sacred island, accompanied with prayers, joining of hands, throwing up water toward the sun, and drinking some of it. Every part of the person is thoroughly scrubbed, the hair is scoured with mud and sand, the teeth are cleansed with the water in which their filthy clothes and persons have been washed; their wet clothing is always put on again without drying; and thus they return to the shore which is covered for miles around with their offal and filth.

Many pilgrims come to Ramisseram from the island of Ceylon, and carry back cholera with them, both in boats and across the cluster of islands which forms the so-called Adam's Bridge, which almost connects Ceylon with the main-land of Hindostan. Cholera generally makes its first appearance in Ceylon at the town of Jaffnapatam, which is the nearest Ceylonese town to the coast of India. Thence it spreads south along the western shore to Colombo, the present capital of Ceylon; thence eastward and inland to Kandy, the old capital; showing itself most promptly where human intercourse is most frequent.

It often reaches the pilgrims going to and from Adam's Peak; for Ceylon, too, has its sacred places and pilgrimages, which aid in the distribution of cholera. Adam's Peak is six thousand five hundred feet above the level of the sea, and upon its very summit is a deep depression two or three feet along, which is worshipped as the print of Adam's foot, when he first descended from heaven to earth, and used the before-mentioned islands as stepping-stones to reach the main-land. In commemoration of this supposed fact, a little temple of ironwood, only eight feet high, and ten feet square, has been erected over the sacred footprint, which annually draws countless thousands to the spot. The so-called footprint is surrounded by a frame of gold, set with numerous jewels, some of which are genuine and of large size. Noffoneister says the ascent to the temple is very difficult, for there is no regular and convenient path; while here and there in the steepest places a few rude ladders made of branches tied together, or occasional steps cut in the rock, are all that has been done to assist the pilgrim in his perilous ascent. But

everywhere along the road the smoothness of the exposed roots of the iron and laurel trees shows that many human beings have trod this path for centuries; as, before the feet of the pilgrims could have worn them into the semblance of flights of stairs which they now present, many and many a hundred thousand of steps must have pressed them. Again, some of the contrivances to assist the pilgrims in their ascent are both novel and curious. Countless iron chains, of every form and fashion, are riveted to the steepest parts of the rocks, and there they hang by scores; some inclining down from the right side, others to the left; some old and rusty, others new and shining. For it is deemed so meritorious a work to supply them, and they have finally become so numerous, that one can scarcely step or fall without being caught in some of them. At the last stage there is a flight of iron stairs, swinging loose and almost vertical, by which alone the summit can be reached.

From this place and others, cholera is carried to the northeast of Ceylon, to the great port of Trincomalee, where it is easily given to the English and foreign shipping, and conveyed to various places even down as far as the island of Mauritius, on the Southeast African coast.

To return to India: in the middle of Southern Hindostan, due west of Madras, and about forty miles south of the great city of Bellary, are the ruins of the ancient city of Bijanagur. This was the last capital of the vast Hindoo Empire, before it was completely overrun by the Mohammedans. Its ruined walls can still be traced in many directions and to great distances. For miles and miles one can tread on steps, pavements, pillars, capitals, and cornices, displaced or fallen, and all mingled in great confusion. A vast population and a wealthy civilization once existed here; but now naught remains but one large temple. Yet this is kept in good repair, and a pilgrimage is made to it annually by crowds of devout Hindoos, who also hold a huge mercantile fair in this wild scene, which is beautified by thick wild shrubbery, aglow with flowers of the most brilliant colors, over which many tall palm-trees wave their graceful branches.

Unlike the ruined and long-forsaken temples of Egypt and of Greece, this temple is still visited by multitudes of enthu

siastic worshippers. The sounds of bells, gongs, sacred conch-shells, and shrill pipes, still indicate the hours of attendance at the shrine. Numerous priests officiate amid a din of discordant music, the smoke of cocoa-nut oil, *ghee* (or melted butter), and more fragrant incense; they still utter invocations, practice incantations, and receive the votive offerings of hundreds of thousands of deluded worshippers. These are followed by ablutions in the sacred river Tomboodra, which flows past the ruined but still sacred town; by drinking of the polluted water, as is done at Ramisseram and Hurdwar, and by processions of the idol-cars, like those of Juggernaut and Conjeveram.

English physicians have long since decided that this great fair and festival of Bijanagur is a prolific source of cholera to the neighborhood. The citadel of Bellary is only a few miles distant from Bijanagur, and cholera has never been absent from it for a year since 1818. The citadel is situated on a granite hill five hundred feet high; on its bare surface only a scanty vegetation grows, and the soil at its base is equally sterile, while every thing is dried up by the fierce rays of the Indian sun. There are no marshes, rivers, or dense and exuberant vegetation, which may afford a congenial soil for cholera; but the graveyards of each successive English regiment which is sent to the spot bear sad testimony to the permanent and unrelaxed activity of this dire disease. Cholera prevails severely every year in the barracks on the rocks, in the native town and in the bazaars immediately adjoining them, and breaks out afresh every year soon after the festival at Bijanagur.

From Bijanagur cholera is also, doubtless, carried over to the extreme west coast of Hindostan, especially to the great seaports Calcutta, Goa, etc., on the southern and middle shores of Western India, especially when aided by other pilgrimages and festivals to and from the great city of Bejapoor, in the western portion of Southern India.

It is on the home-journeys of the pilgrims especially that cholera becomes most virulent; for, as perilous as is the journey to the sacred shrines, the home-stretch is even more fraught with danger. No longer borne up by excitement, the

pilgrims, ill fed, wearied, and poor (for, in addition to their large travelling-expenses, they have also given generous fees to the priests), they become foot-sore and down-hearted; forced marches knock up both man and beast; or others listlessly occupy the same filthy and infected vehicles which brought them; all return stupidly to the same soiled camping-grounds, which had been previously defiled by themselves or their fellows; and many fall an unresisting prey to sickness, for the public roads and thoroughfares are saturated with the foul elements of epidemic choleraic disease. From these great festivals cholera almost always accompanies the homeward-bound pilgrims. The villages visited on their routes become infected by them, and the gradual dispersion of the pilgrims to their homes is the immediate means of distributing the disease in numberless directions.

About one-third way up the east coast, from the south, and about forty miles below Madras, is Conjeveram, or the Golden City. It has one hundred and ninety-six temples, of which no less than one hundred and eighty are dedicated to Siva. The pretty cottages of the inhabitants are overtopped by stately trees, and the whole place at a little distance seems to be formed of a crowd of magnificent white temples, mingled with the green foliage of innumerable palm-trees.

At the time of the annual festival, which takes place in May, and lasts ten days, the houses are all freshly painted and decorated with flowers, while garlands and floral arches span the streets, which are always crowded with joyous worshippers, often to the number of one hundred thousand. The women wear the white blossoms of the jasmine in their beautiful hair, and their arms, necks, and ankles, are loaded with ornaments. The men appear in their gayest attire, and all the rich colors of Oriental costume are to be seen in the most brilliant variety.

The roads in all directions are thronged with persons carrying bundles on their heads, or children in their arms; some of them are old and feeble, but all are pressing forward to the festival with eagerness.

At dawn of the first day of the festival the doors of the great temples are thrown open, and the breathless multitude

behold and bow before their idols; they light the incense in their small censers, and send up those maddening cries with which they always hail their gods. The programme is varied each day, but the main feature, as at Juggernaut, is the procession of the idol-gods in their cars or chariots. The immense car is rolled out, decorated with flowers, gorgeously painted, crowded with Bramins, and drawn by six or seven thousand persons. It is preceded and followed by noisy musicians; by long files of dancing-girls; by bands of bareheaded priests; by impudent fakirs beating tomtoms, ringing bells, and blowing horns; by the elephant of the temple, gay with crimson-and-orange-colored trappings; bullocks and camels are driven along; while horsemen, footmen, women, and children, crowd around in unnumbered thousands. The air is rent with frenzied shouts and yells; additional hundreds lend their willing hands to propel the car along; the movement becomes more and more rapid, as the Bramins ply their deer-skin thongs; the car towers and totters fearfully along, until finally its enormous wheels reach their resting-place.

At night the streets are illuminated with lanterns hung on garlands, stretched from tree to tree; booths are lighted up with figures and paintings of the gods and goddesses; cannons are fired at intervals; rockets course and curve through the air; huge fireworks blaze off in front of the temples; the numberless shrines in the middle of the numerous tanks are illuminated; there is a blaze of innumerable torches on the flashing waters, and the glare of white, blue, orange, green, and crimson Bengal lights is seen everywhere. All this takes place amid the clash of cymbals, the beating of drums, the frenzied shouts of exulting fanatics, and the loud songs of devotees and merry idlers. This mad revelry goes on for ten days and nights. The nautch-girls often dance and do worse in the colonnades of the temples; and all are encouraged to license and debauchery by the priests.

To reach these temples the pilgrims walk incredible distances under a burning sun, or ride closely packed in stifling carts, crammed to suffocation by numerous human beings. Thus they struggle along in different roads, or no roads at all. Their food is poor at the best; they drink freely of pernicious

arrack, or fermenting toddy, or offensive and filthy tank- or well-water, which is still more poisonous. They sleep in their foul conveyances, or lie exposed on the bare ground, chilled by dews and night winds; or, if they stop at a native town, they crowd into the overfilled bazaars, and sleep in filthy travellers' rest-houses, where they lie packed as close as may be, with the thermometer at from 70° to 80° at the lowest.

At the places of pilgrimage much of the food of the devotees is prepared and sold by the priests in the temples; it is either acrid or oily, and often putrid, while the drinks are all sour. The pilgrims arrive at their tabernacles after undergoing every fatigue on their toilsome marches, half starved, and much exhausted, and are conducted by the priests into small and badly-ventilated rooms intended for the accommodation of twenty to thirty persons each; they wash themselves in the foul pools or tanks, and visit the temples and idols with their wet clothes still upon them; they eat a variety of bad food with eagerness, taking no notice of its condition, taste, or quality, under a deeply-impressed idea that any criticism would be an act of blasphemy not only to their priests, but also to their gods. The whole is washed down by draughts of very sour and rancid *tyre*. They may remain well for twenty-four hours, but on the second or third day the principal causes of cholera and diarrhœa, viz., sudden transitions from heat to cold, the use of spoiled and indigestible food, bad water, and acid drinks, the want of free ventilation, and entire absence of all drainage and cleanliness, soon begin their operation. "Can it be wondered at," says Macpherson, "that the pilgrims are unhealthy? Is it surprising that cholera breaks out among them when they meet by the hundred thousand in densely-crowded native towns without any sanitary precautions or regulations; when the only water they can drink is defiled by cattle, by the washings of carts, and filthy clothing, and by the bathing of still fouler human beings?"

The town of Conjeveram is large, pretty, and regularly built; the streets are broad, and planted with cocoa-nut trees, and a beautiful stream runs along its western side; but during the festivals the streets and houses quickly become impregnated with noxious exhalations, emanating from the decomposition

of the excrementitious and urinous deposits, with which the streets and alleys, fields and plains, are loaded during the assemblage of people in such great numbers, as well as from the dead bodies thrown out into the fields and towns without sepulchre. Diarrhœa and cholera soon originate; great alarm and despair are produced among the pilgrims, who quickly set out for their homes.

The annual fair and festival at Conjeveram is almost regularly the means of introducing pestilence into Madras, says Macpherson, and from this city it is often conveyed by shipping to Ceylon and more distant places.

These are only a few of the festivals which take place in Southern India, which is mainly peopled by the gay and licentious Tamul race, and the whole distance from Madras down to Cape Cormorin is the stronghold of the most festive form of Hindooism. The country is covered with temples, which for size, grandeur, complexity of design, variety of detail, and amount of labor expended on them, surpass even the Gothic cathedrals of the middle ages. Cholera is brought to and from almost all these temples every year, and thus is widely spread over the whole country.

Two-thirds of the way up the eastern coast of Bengal lies the great temple of Juggernaut. At this place, like all the other great temples, no less than a dozen minor festivals take place every year (but the principal one occurs annually early in March), and increase in sanctity and popularity every third, sixth, twelfth, and sixtieth year. The twelfth-year anniversaries are regarded as of much higher importance than those which intervene, and are visited by a far greater number of devotees; although the ordinary annual concourse is estimated at no less than two hundred thousand, at which fatigue, want of food, exposure, debauchery, camping on foul ground, and drinking filthy water, always occasion a frightful havoc. For eight or ten miles in every direction around the temple the ground is covered with the bodies and skeletons of countless pilgrims who have sunk under accumulated hardships, and furnish a frightful banquet to numberless carrion-birds and beasts.

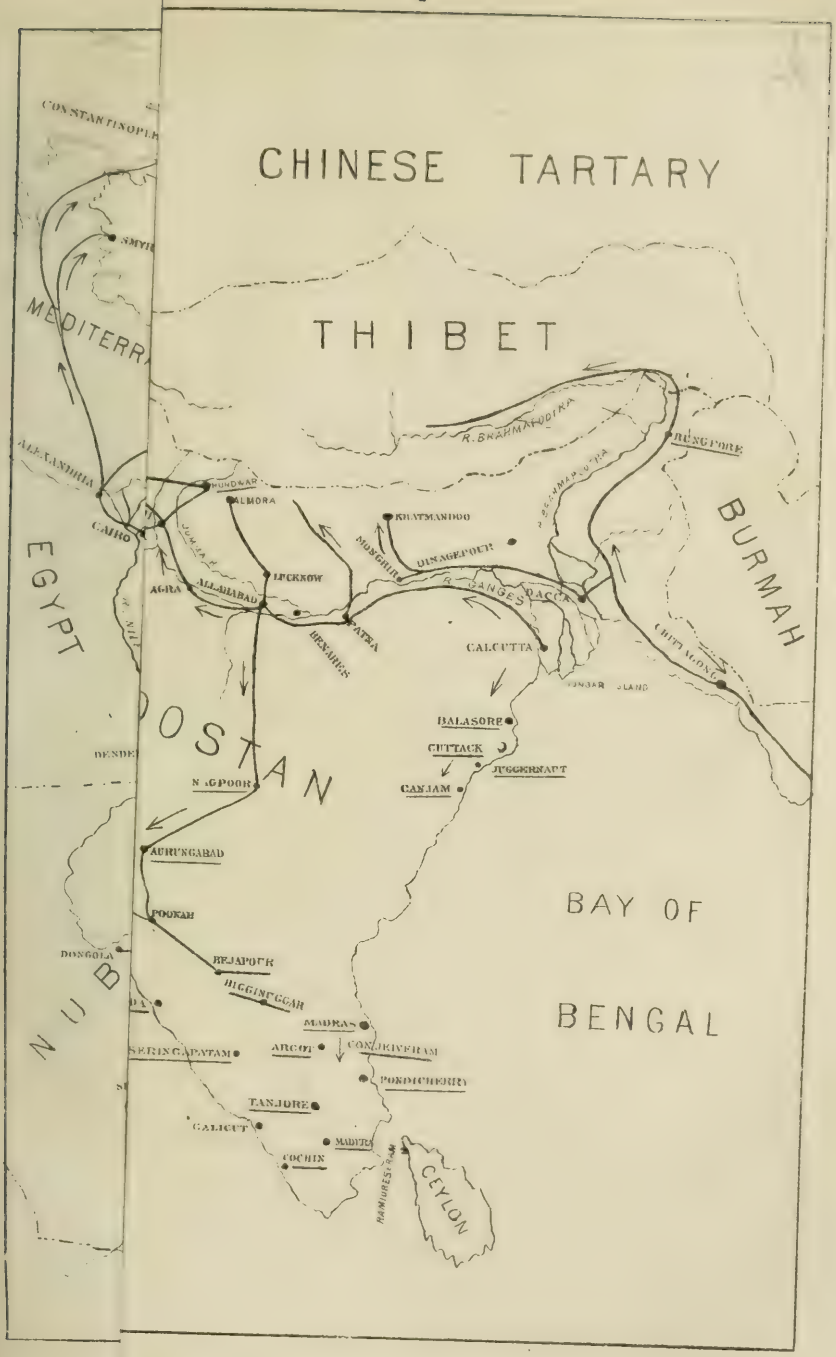
While at Conjeveram all external Nature is beautiful, at Juggernaut all is horrible. The climate is severe, and the soil is destitute of all vegetation, consisting of a deep, loose sand-waste, and a desolate coast. Drenching rains, damp gales, and sudden tempests, add to the horrors of the bare sands and surging ocean, and each day the results of fanaticism and debauchery become more and more ghastly, as the wan victims of famine, exhaustion, disease, and vice, drop down more and more rapidly, making a Golgotha around the unhallowed precincts.

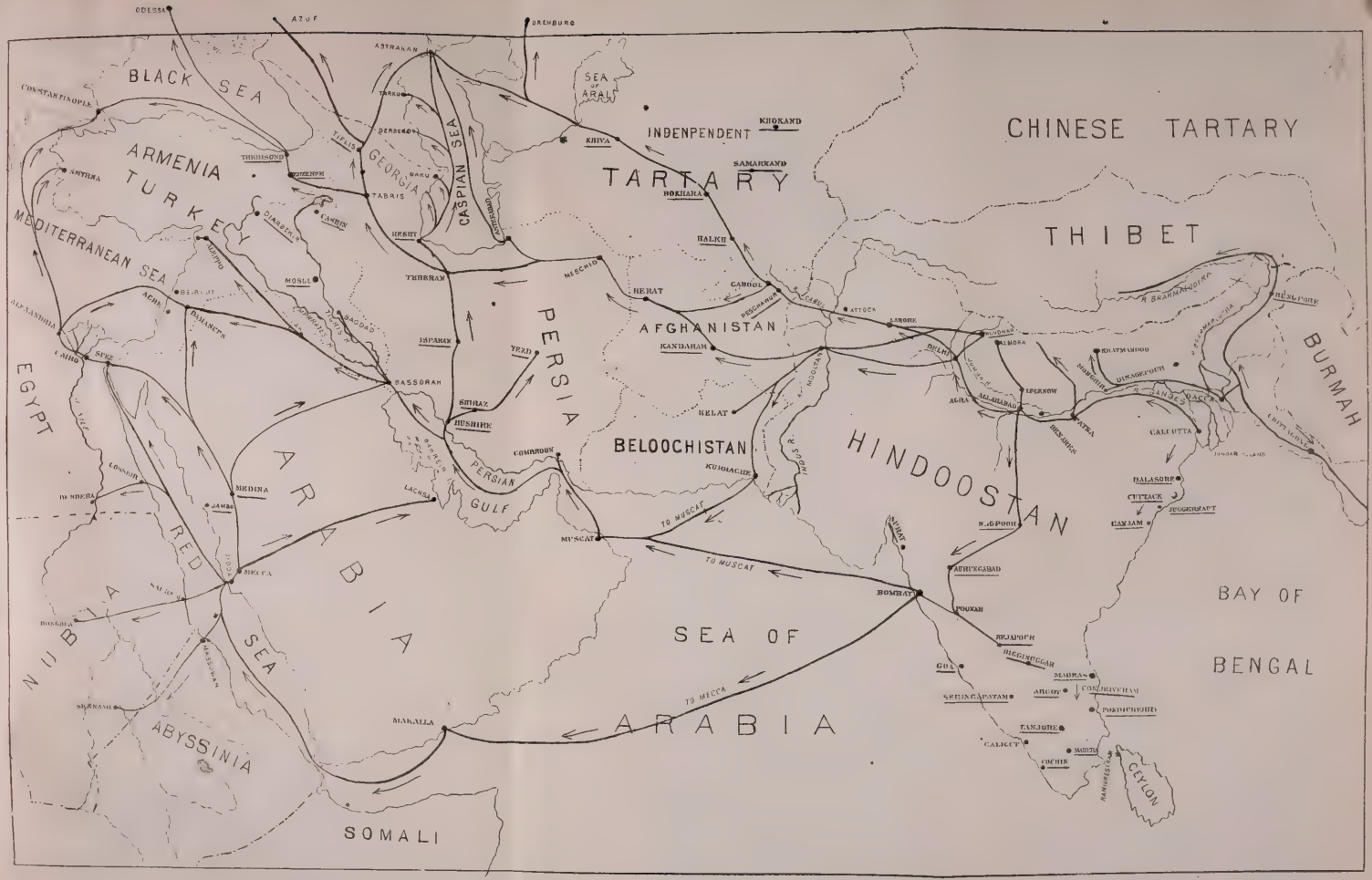
To counteract these horrible consequences, the pilgrims are not only licensed but encouraged to all kinds of debauchery and excess, by day and night. They strive to emulate Krishna when he took the name of Juggernaut, or Lord of the World, made love to ten thousand milk-maids at one time, and assumed that every thing, male and female, animate and inanimate, was made solely for his pleasure. The idols are drawn about by thousands of men and women; the Bramins sing and recite lascivious songs from the platforms of the cars, accompanied by the most indecent acts and gestures; mad revelry is carried on by day and by night, until malignant cholera appears, when universal panic ensues: the great crowd disperses quickly; and each band of pilgrims, as it returns homeward, carries the disease along with it. Almost every town, village, and bazaar, visited by them receives some of the infection, which may increase so fearfully that the inhabitants in their turn desert their villages, and flee from their filthy habitations to the jungles, leaving their dead and dying behind them. At such times it is not uncommon to find whole towns deserted, and the dead left unburied in the houses, streets, and ditches. The fugitives who reach the jungles have no food but roots and berries; nor shelter for the weather; nor drink, except stagnant and corrupted water, so that in the very depths of the jungles the dead may become so numerous as to taint the air to a great distance.

Nor are these all the bad consequences of the "pilgrim-nuisances." The public roads and thoroughfares become saturated with the elements of the disease, and every well, and spring, and stream, along the pilgrim routes becomes dangerous

to marching troops and wayfaring travellers. "We have but to recollect," says Macpherson, "the numberless instances in which cholera has been thus brought into moving camps and bodies of travellers, to recognize the fatal facility with which passers-by may be poisoned by the tainted camping-grounds of previous visitors, both by the soil and the water. In this connection we may say that the first accurate account which we have of Asiatic cholera in Hindostan, in not very remote times, relates to the sufferings of a division of English troops, consisting of five thousand men, while marching under the command of Colonel Pearse, near Ganjam, not far from the great temple of Juggernaut. This force was attacked *suddenly* with the pestilence on March 22, 1781, i. e., very shortly after the festival at Juggernaut must have taken place; and with an almost inconceivable celerity and fury, which could only have originated from contaminated water. Men, previously healthy, dropped down by dozens, and those less severely affected were generally past recovery in less than twenty-four hours. Besides those who died quickly, there were about five hundred on the sick-list on the first day, and in two days more over one-half of the corps was ill. This epidemic was carried two hundred and fifty miles to the northeast, to Calcutta, where it occasioned a great mortality among the natives, and also progressed down the coast to Madras, which it reached in 1782. It is also quite significant as regards the influence of the larger or twelfth year festivals, on the production of cholera, that the earliest historical accounts tell us that it raged at Calicut in the extreme southwest of Hindostan in 1550; while, according to the Jesuit father, Papen, it again broke out on the Hooghly River, above and below Calcutta, in 1709, which is 17 times 12, or 204 years subsequently. In 6 times 12, or 72 years more, we have seen that it was very fatal again at Juggernaut, viz., in 1781, and thence was carried up to Calcutta, and down to Madras. Three times 12, or 36 years subsequently, brings us to the great historical epidemic of 1817, which was followed in 4 times 12, or 48 years, by the last stupendous outbreak, viz., that of 1865, as predicted by the writer of this paper."

It is well to notice that the Juggernaut, or eastern twelfth-year festivals occur two years earlier than the Hurdwar, or


CHINESE TARTARY
THIBET
BAY OF
BENGAL
BURMAH
EGYPT
CONSTANTINOPLE
SMYRNA
ALEXANDRIA
CAIRO
MUNDAR
ALMORA
KHATMANDOO
LUCKNOW
AGRA
ALLAHABAD
PATNA
BENARES
DINAGEPOUR
MONGHIR
R. BRAHMAPOUTRA
R. GANGES
RUNGPORE
CHITTAGONG
CALCUTTA
BALASORE
CUTTACK
JUGGERNAPT
GANJAM
NAGPOOR
AURUNGABAD
POONAH
BEJAPOOR
BIGGINGGAR
MADRAS
ARCOT
CONJEVERAM
POKIMCHERRY
TANJORE
CALICUT
MADURA
COCHIN
CEYLON
RAMISSERAM
DONGOLA


ODESSA
AZUF
ORENBURG
ASTRAKAN
BLACK SEA
CONSTANTINOPLE
SEA OF ARAL
INDENPENDENT
KHOKAND
CHINESE TARTARY
ARMENIA
TURKEY
GEORGIA
TIFLIS
DERBENT
CASPIAN SEA
KHIVA
TARTARY
SAMARKAND
BOKHARA
THIBET
MEDITERRANEAN SEA
TABRIS
KERBUT
HALKH
MOSUL
TEHERAN
MESCHID
HERAT
CABOOL
PESHAWUR
ATTOCK
LAHORE
AFGHANISTAN
BAGDAD
ISPAHAN
YEZD
KANDAHAR
DELHY
AGRA
ALLAHABAD
BENARES
PATNA
CALCUTTA
BURMAH
EGYPT
BASSORAH
SHIRAZ
PERSIA
KELAT
BUSHIRE
COMROON
BELOOCHISTAN
KUHACHE
HINDOOSTAN
ARABIA
PERSIAN GULF
MEDINA
LACHSA
MUSCAT
TO MUSCAT
SURAT
NAGPOORE
BALASORE
CUTTACK
JUGGERNAUT
CANJAM
BAY OF BENGAL
RED SEA
ABUSHUSHAR
BOMBAY
POONAH
SEA OF ARABIA
BEJAPOOR
GOA
MADRAS
SERINGAPATAM
ARGOT
CONJEVERAM
PONDICHERRY
TANJORE
CALICUT
COCHIN
MADURA
CEYLON
MASSOWAH
ABYSSINIA
MAKALLA
SOMALI

great northern festivals. Thus, the Juggernaut cholera of 1781 was followed by the great Hurdwar epidemic of 1783; the Juggernaut cholera of 1817 was followed by the Hurdwar pestilence of 1819; and the Juggernaut cholera of 1865 was supplemented by the stupendous outbreak at Hurdwar in 1867. We may expect an epidemic of cholera again in 1877 and 1879.

It is now well known that all junctions of streams, all places where large rivers empty into the ocean, or where the waters of two great seas mingle, are held in much veneration by the Hindoos, who make weary pilgrimages to them at least once a year, and notably every twelve and sixty years. The principal holy places in the Delta of the Ganges are Sougan Island, at the mouths of the Hooghly, just below Calcutta; the islands at the mouths of the Brahmapootra River, where it divides into the so-called Megna and Hattia Rivers; the junction of the Ganges and Brahmapootra Rivers, at or near the great city of Dacca; and Kishnagar, at the junction of the Ganges and Jellinghy Rivers, only seventy miles north of Calcutta. All these so-called holy places are in the Sunderbunds, or Delta of the Ganges, or the "home of cholera," where for hundreds of miles the whole country is an almost continuous swamp, intersected by lagoons, from which fetid exhalations, caused by the rapid decomposition of animal and vegetable matter, rise and hang over the low land like a dense fog. As early as March every year the days always become oppressive and the nights unrefreshing; the hot, damp, and fetid air clogs and impedes the lungs, debilitates the whole body, and is pregnant with disease. A large number of the Hindoos are always in a condition to attract choleraic disease. Thus the *ryot*, or cultivator of the soil, lives all his days on coarse rice, and goes covered with a slight cotton cloth only; his habitation is a mud-hut, or a thatched roof upon open supports; his bed a coarse mat and a slender sheet; vegetables and fish, which are mere drugs in Bengal, are rare luxuries to him, and to obtain them, even occasionally, his wife and children must help him in his labor all they can. Still the collective earnings of the great majority of whole families rarely exceed fifty dollars a year. Thus, he labors from year to year, and morn to eve, a haggard,

poverty-stricken, and wretched creature, who often fasts for days and nights from literal want of food. The huts of the natives of the Delta are surrounded with trenches, the earth from which has been used to erect mounds in order to raise their habitations above the swamps and water. The pits thus formed are the receptacles of every kind of nastiness, as well as stagnant water, and the exhalations from them are at times almost insufferable. During the wet season the cattle are obliged to take refuge upon these mounds, and are often housed under the same roof, and even in the same room, with their owners.

If such is the condition of single houses, that of their aggregation into towns and villages can easily be imagined. The streets, which are always very narrow, are rendered highly odoriferous and exceedingly unhealthy by the unclean habits of the people, and the entire absence of all sanitary regulations. Adjutant-birds, jackals, and pariah-dogs, are the only scavengers. The latter are allowed to roam and fester about in every purely native town in myriads; they are wretched and diseased; lie in every nook and crevice, dead, dying, or snarling. The country people who come into the towns with their produce in bullock-carts live entirely in the streets or squares. They eat, cook, and relieve themselves in the open air as near their carts as decency will permit. All their dejections and filth are cast upon the open ground, whence they soak into the subsoil, or are washed into the ditches, drains, wells and water-tanks, causing much sickness amid a vast and careless population. It is well known that the Ganges is regarded as a sacred river by the Hindoos, but it is not equally notorious that the Brahmapootra, or "offspring of Brahma," is equally venerated. In fact, there is a great rivalry among the priests of the real Ganges and those of the Brahmapootra, and those of the false Ganges, or Hooghly, upon which Calcutta is situated. However this may be, the extreme point of Sougan Island, at the mouth of the Hooghly, is believed by some Hindoos to mark the junction of the Ganges with the sea, and to be as sacred as the Island of Ramisseram in the south; in fact, they esteem it as one of the holiest spots in all Bengal, and accordingly flock thither every

spring in vast numbers for the purpose of bathing and offering sacrifices. There is much reason for the belief that this island was one of the principal centres of cholera in the great epidemic of 1817, and that the disease was carried up the Hooghly both to Calcutta and the historical town of Jessore, although both of these towns are always filthy enough to generate cholera within their own limits; and it is now also well known that cholera is often brought up to Calcutta from Juggernaut. At least, this is the easiest way to account for the presence of cholera in Calcutta in the first week in August, 1817, while it did not reach Jessore, which is one hundred miles to the northeast, until the 28th of the same month. But the disease was also at Kishenagur, seventy miles north of Calcutta, in May and June, and may have been transported down from there and over to Jessore, which is only fifty miles east.

But large numbers of the Hindoos do not regard the Hooghly as the true Ganges, and place the mouth of this river much farther east, toward the province of Arracan and the kingdom of Birmah, and perform their pilgrimages to the islands at the mouths of the united Ganges and Brahmapootra Rivers, near the great rivers Megna and Hattia. Thence cholera was carried up the river to the province and city of Dacca, early in July, 1817; first appearing at Sureogong on the banks of the Megna; thence progressing north, visiting all the *ghauts*, public ferries, and grain-markets, on its way. From Dacca it was carried northeast to Jylbet by the 17th of August, or two weeks before it broke out in Jessore, and reached Rungpoor, high up the Brahmapootra River, toward Assam and Thibet, and the western part of China, by the 15th of October.

From the united mouths of the Ganges, Brahmapootra, and Megna Rivers it was also carried far around the eastern side of the Bay of Bengal to the city of Chittagong, as early as the 23d of August, or five days before it reached Jessore, and thence was transported southeast down to Arracan, also to Rangoon, in the Birman Empire, and to Bankok in Siam. From the Sunderbunds and Delta it is always conveyed to the north and the west and the east, and would also be carried directly south if the great Bay of Bengal did not intervene.

We can now readily understand how cholera may break out at very remote places in Hindostan at nearly one and the same time, especially in March and April every year, and notably every twelfth year. Near sacred and filthy places it is always generated; and for sacred rivers, and filth and pagan temples in Hindostan, it always testifies a strong regard.

Calcutta is a great centre for the origin and distribution of cholera, which may be brought there from Juggernaut, Sougan Island, or Junghera.

Calcutta, with eight hundred thousand native inhabittants, has only about two thousand resident foreigners. The European quarter is a cluster of palaces; but the immense "black or native town" is filled with wretched houses and miserable huts, clustered in irregular groups around large, square, filthy tanks, and connected by narrow, winding, unimproved streets, exceedingly offensive to the smell. The whole city stands upon almost level, alluvial, marshy ground, formerly covered with stagnant pools. About four and a half miles east is a large but shallow lagoon of salt water, from which a canal has been cut up to the city, and toward which all the drainings of the place flow; and even many of the natives can never go near the bad water "without suffering from attacks of nausea and headache." Placed in the burning plain of Bengal, on the largest delta in the world, amid a net-work of sluggish, filthy, muddy streams, in the neighborhood of the jungle and marshes of the Sunderbunds, and yet so distant from the open sea as to miss the benefits of the salt breezes which console Bombay and Madras, the site of Calcutta unites every condition of a perfectly unhealthy situation, and human efforts have done every thing to make it worse. The stupendous energy of the Hindoo in manufacturing filth and bad smells has been aided by ignorance of the municipal council, and the combined effect is overwhelming. A short walk in some of the worst lanes and alleys will turn the stomach of a scavenger or costermonger. The English have now established a few good tanks for filtered rain-water, but a large portion of the inhabitants and sailors obtain their drinking-water from the Ganges and its tributaries. Dr. Norman Cheevers informs us that the night-soil of Calcutta is

deposited in the Hooghly at the rate of one hundred and eighty tons a day, and that the river-water from two to thirteen miles up the stream is unfit for human consumption. In addition, twenty-two sewers open directly upon a soft, muddy bank in the river, on which much of the filth lodges and remains. It is also well to note that a sewer empties itself close to each of the bathing-ghauts, or places, so that the bathers are furnished with an extra, special flood of filth. The sailors often drink of this polluted water, which has not been too emphatically called "the maelstrom of death," which converts a harbor of refuge into a port of sickness and death; for one draught of this dangerous fluid is more fatal than all the unripe fruits and bad rum that Jack can drink. Thus, of one hundred and eighty-one cases of cholera taken into one hospital from ships, one hundred and fifty-five came from the two filthiest mooring-spots, only nine from the cleanest, and seventeen from intermediate places.

Every morning, soon after sunrise, the river is crowded with Hindoos performing their devotions, of which ablution is an essential and leading part in this "water-worshipping race," followed by drinking some of the same. Then they have a dab of white, yellow, or red paint put on their foreheads by the priests as a sign that they have performed worship, or *poojah*, that day, and go to work in their wet clothes.

From Calcutta cholera extends up the Ganges from city to city and port to port, until near Boglipoor it meets a new stream of the disease coming down from the sacred island of *Junghera*, which rises like a mountain from the Ganges, and which was formerly considered the holiest spot along the whole river, so that thousands of boats and larger vessels were constantly to be seen there, crowded with worshippers, who thought they could not die in peace without visiting it. Thus, every city and village, from Junghera down to Sougan Island at the mouth of the Hooghly, soon becomes affected with the disease by the return of these boats up and down the river from Sougan Island and Junghera, affecting the shipping, cities, and villages of almost every place adjacent to the Hooghly and Ganges, and destroying many of their inhabitants.

Above Junghera another column of the disease is often found to be coming down the Ganges from the great city of

Patna, and it was subsequently found that the cholera of 1817 had raged there ever since the 11th of July, while it did not break out in Jessore until the 17th or 28th of August. The disease is supposed to have been brought from the holy city of Gaya, only a few miles directly south and inland of Patna, and 265 miles northwest from Calcutta. In Gaya the streets are narrow, filthy, and hardly passable, but there are numerous shrines and places of pilgrimage, visited by devotees from all parts of India. A branch of the Ganges which runs through the town is considered a sacred stream; there is a revered temple of Vishnu, and the remarkable ruins of Buddha-Gaya, from which Buddha is supposed to have made his ascent to heaven and whence the principal sanctity of the town is derived.

From and to Patna cholera is carried to and from Benares, which lies farther north on the Ganges. Benares is the holy city of the Hindoo, of far greater sanctity to him than Mecca to the Mussulman, or Jerusalem to the Jew, or Rome to the Catholic, for here Mahadeo, the god of the generative principle, made his last appearance on the earth. It is so peculiarly sanctified that all who live within a circuit of five miles, or even visit it, go to the Hindoo paradise whether they wish it or not. The daily number of devotees on the bank of the river is fifty thousand, and at least three or four hundred thousand arrive annually at the great festival, or *Mela*, in honor of Mahadeo; and the river is then black for miles with the bathers' heads. The Ganges-water near Benares is considered so holy that it is carried to great distances for sale, and for private use. Bayard Taylor found the road swarming with pilgrims, each carrying his two jars of Ganges water to his distant home. In one afternoon he passed thousands and thousands of pilgrims thus employed. By these immense bands of pilgrims which constantly traverse the country, to and from these innumerable holy places, we can now readily understand how the disease is transported and distributed in every conceivable direction.

Allahabad is seventy-six miles north of Benares, at the junction of the rivers Jumna and Ganges. It is called the City of Allah, or the City of God, because it is believed that a

third invisible river flows directly from Paradise and joins the Ganges here. Here, too, Bayard Taylor found the roads thronged with pilgrims returning from it, and most of the women as well as the men carried large jars of filthy Ganges water, suspended from poles.

We can now understand the almost inconceivable rapidity with which cholera spreads along the Ganges and neighboring country whenever an epidemic commences. And it must always be remembered that the disastrous influence of these epidemics is increased from four to tenfold every twelfth year.

The great city of Mirzapoor, upon which McNamara dwells, lies between Benares and Allahabad. This district of country is of great historical interest in connection with the fatal epidemic of 1817. The huge province of the Bundelcund lies directly south of it, and the memorable war against the Mahrattas was being conducted by the Marquis of Hastings. Ten thousand natives had already died in Allahabad of cholera, when on the 6th, 7th, and 8th of November the disease made its appearance in the English army. After creeping about in its wonted insidious manner for several days among the lower class of camp-followers, who had come down from Allahabad, it, as it were, in an instant burst forth with irresistible violence in every direction. The natives deserted in great numbers, and the highways and fields for many miles around were strewn with the bodies of those who had left the camp with the disease upon them, and speedily sunk. The line of march of the army presented a most deplorable spectacle, as the sick were too numerous to be removed, and the greater part were left behind to die unattended. Hundreds dropped down with every day's advance, and the roads were covered with the dead and dying. The places of encampment and the lines of march presented the appearance of a battle-field, and the track of an army retreating under every aggravation of defeat and discomfiture. In less than two weeks nearly nine thousand men died of cholera!

While this dreadful havoc was going on in the centre of India, a subsidiary force was sent up from Bombay, from the extreme west coast of Hindostan, through the towns of Poonah, Seroor, Jaulnah, Ahmednuggur, and Aurungabad, to the great

city of Nagpoor, lying due south of Allahabad and the Bundelcund. The disease reached Nagpoor from the Marquis of Hastings's army, through the cities of Huttah and Jubbelpoor, pursuing a due southerly course; and the subsidiary force, moving north under Colonel Adams, afforded the first striking instance of a large body of men coming into the pestilential medium, and, from the previous enjoyment of perfect health, falling, at once, into a wretched state of sickness. When nine miles south of Nagpoor, it had hardly learned that the epidemic was raging in the city and vicinity, when it began itself to experience its unwelcome visits, and seventy cases and twenty deaths occurred on the first day. Many were attacked while *loitering for water* at the neighboring contaminated rivulets, and some were brought in expiring, others dead.

From Nagpoor, it passed down to Jaulnah, the next town in order toward Bombay, in the southwest. The course of the disease had long been so regular along the line of much-travelled roads and the marches of troops, that the Bombay authorities concluded, "when it showed itself at Jaulnah, it was pretty clear that it would reach Bombay," although many hundred miles off. It was well known that it had "reached Jubbelpoor, north of Nagpoor, by the 9th of April. It arrived in Nagpoor in May; was carried down to Jaulnah in June, by a detachment of troops that was marching from Nagpoor to Jaulnah and Aurungabad; then passing over a space of two hundred and twenty miles, visiting Aurungabad and Ahmednuggar in its course, it reached Seroor, one hundred and fifty miles farther to the southwest, on the 18th or 19th of July. It appeared at Poonah toward the latter end of the same month. On the 6th of August it broke out with great violence at Panwell, a considerable village on the main line of communication between Poonah and Bombay, and distant about twenty miles; and on the 9th or 10th of the same month the first case in Bombay occurred in a man who had arrived from Panwell the same day. The disease could be traced as if creeping along from town to town, village to village, and from place to place, by the arrival of people affected with the disease from places where the disease was known to prevail."

Cholera prevailed severely in 1818 and 1819 in Bombay, and then moderately for several years, but in 1821 it broke

out again in its most mortal and malignant form. Then eight hundred British troops, under Captain Thompson, were sent to the island of Kishme, at the entrance of the Persian Gulf, and from there sent in the rear of Muscat, to coöperate with the Iman of that place; but they were massacred by the Bedouins, so that only a hundred and fifty escaped back to the city; but three thousand more troops were sent from Bombay, under Sir Lionel Smith, and cholera was introduced by them to Muscat, and carried up the Persian Gulf to Bushire and Bassorah, the only ports of any importance on that sheet of water.

Bushire is not merely the principal but the only port of Central Persia, and the communication with Shiraz to the north is incessant. Many writers say that it was transported by travellers from the former to the latter place; and six thousand persons died of it in eighteen days. From Shiraz it was carried north to Yedz and Teheran, and from there to Resht, at the foot of the Caspian Sea, and from there to Astrakhan in Russia.

Teheran has always been a great centre for the distribution of the disease. It was carried both from Teheran and Ispahan to Kasbin, in July, 1822, to Tauris between the Black and Caspian Seas in September, and extended immediately to Erzroom, and from there to Trebizond, on the Black Sea.

Bassorah is also the principal and only port at the head of the Persian Gulf. Cholera appeared there with extraordinary violence in 1821, as from fifteen to eighteen thousand persons died in eighteen days. From this city it was carried by boats and caravans up the river Tigris to the great city of Bagdad, which became infected, together with the surrounding country. A Persian army at this time menaced Bagdad, and defeated the Turkish force which was collected for its defence; but, a few days after the victory, the prince royal of Persia saw his army devastated by the epidemic, and recoiled before this new enemy; and carried the disease into the heart of Persia from this new direction. He lost two thousand soldiers from cholera in one march, and when his army reached Kasbin and Tauris, between the Black and Caspian Seas, from thirty to forty were dying each day.

The cholera was thus introduced into Tauris from three directions, viz., from Teheran in the east, Ispahan in the south, and Bagdad in the west; and one-half of the whole remaining population, or four thousand eight hundred persons, died in twenty-five days.

From Tauris the disease was transported farther up between the Black and Caspian Seas to Tiflis, and thence to Astrakhan, where it had already arrived by water from Resht, the principal port on the southern shores of the Caspian Sea.

From Bagdad the disorder was carried by caravans due west to Damascus and to Aleppo, near the Mediterranean coast.

Thenceforth, each successive epidemic of cholera has always been carried from Bombay up the Persian Gulf, and thus reached the Caspian, Black, and Mediterranean Seas, and the neighboring European countries.

But fortunately the epidemic of 1817–1821 extended no farther than Astrakhan in Russia, at the head of the Caspian Sea, and at the mouth of the Volga.

Europe and America were not so fortunate in the succeeding epidemics, which can be detailed much more succinctly.

Thus far we have traced the progress of cholera from Bombay and the western coast of India, up the Persian Gulf into Persia and Asia Minor, whence it extends to all the countries bordering on the Caspian, Black, and Mediteranean Seas. This is one of the great routes of trade and travel which cholera has always followed, and probably always will, unless quarantine and disinfection are more rigidly carried out in the future than they are even at the present time; for the disease is now prevailing all along the Persian Gulf.

The next great route from India is the *northwestern and central Asiatic*, leading toward Northern Persia and Eastern Russia.

Thus far we had only traced cholera in India as far north as Allahabad, at the junction of the Jumna and Ganges Rivers; it not only ascends these rivers, but comes down them from Hurdwar, which is situated at the source of the Ganges, where it first issues from the Himalaya Mountains. Great is the fame of Hurdwar throughout not only Hindostan, but in Afghanis-

tan, Cabool, Persia, Independent Tartary, and all Central Asia. Every year two or three hundred thousand pilgrims and merchants assemble there in March and April, and every twelfth year at least two and a half or three millions.

Cholera has broken out there every twelfth year since 1783, and notably in 1867. The disease has always been carried to Persia, Central Asia, and occasionally to Russia, by the huge caravans which go down to Hurdwar and return thence. The Hurdwar cholera of 1867 has now reached Russia and Poland; five thousand cases having occurred in St. Petersburg alone up to May, 1871.

The Hurdwar cholera of 1867, which is now progressing over the world, is well known, but we may be allowed to repeat the language of the London *Lancet* of July, 1867, which says: "There never was a more forcible illustration of the doctrine that cholera travels along the line of human intercourse, than that supplied by the pilgrimage to and from Hurdwar. The well-known twelfth year native gathering took place; cholera appeared; the vast assemblage, three millions in number, broke up; and from Hurdwar as a centre, did the pestilence radiate outward in the diverging lines taken by these pilgrims. Caravans with at least thirty thousand camels conveyed the disease over the borders of Hindostan, to the great cities of Candahar and Cabool."

From Cabool it is always carried due west to Herat, and thence to Meschid, the holy city of Northern Persia.

Meschid is so holy that for eight months in the year all the roads to and from it are thronged with pilgrims; nearly sixty thousand come up from Hindostan, Cabool, and Afghanistan, and bring the cholera with them; an equal number come up from Southern Persia, and take back the disease with them; while over one hundred thousand come down from the Black, Caspian, and Mediterranean Seas, and carry back the pestilence to Turkey in Asia, Asia Minor, Armenia, Circassia, and to Southern Russia.

But from Cabool another great line of Russian trade and travel leads northeast to Balk, Bokhara, and Khiva, and thence to Orenburg, the border town of Russia. Orenburg is the centre of the Russian caravan trade to *China* and Central Asia, even down to the very borders of Hindostan.

From Orenburg, cholera is always taken to the great fair of Nijni-Novgorod, where at least three hundred thousand merchants assemble in August. Merchants gather there from all parts of Russia, from Archangel on the White Sea, from Riga on the Baltic, Warsaw, Moscow, St. Petersburg, and all the large towns, and carry back cholera with them.

The cholera of 1831 was carried by Russian troops to Warsaw; thence it progressed west to Posen, Berlin, Hamburg, and Bremen, and was carried over to London almost as soon as it arrived at Sunderland and Newcastle from Riga. Thence it was carried to Ireland; from Ireland to Canada, by emigrants in the spring of 1832; down the St. Lawrence River to Lakes Erie and Ontario; thence by United States troops, going to the Black Hawk War, to Chicago and Iowa, among the Sac and Fox Indians; thence down the Mississippi to St. Louis, Natchez, New Orleans, and Texas.

The Hindostan cholera of 1841 to 1844 reached Southern Russia by way of Persia in 1845; was carried to Hungary in the great Kossuth war; thence to Austria, Central Europe, and France, and was conveyed from Havre to New Orleans, whence it travelled up the Mississippi to St. Louis; thence to Fort Leavenworth, and across the plains to San Francisco; while another branch of the disease reached Cincinnati from the South.

The last great route of cholera from India is by way of the Red Sea to Mecca, where at least ten to twenty thousand Mohammedans come up every twelfth year, bringing the cholera with them. At least fifty to seventy thousand pilgrims come down to Mecca from Persia, Syria, Damascus, Cairo, Alexandria, Turkey, and from the northern coast of Africa, and all the great Mohammedan cities of Tunis, Algiers, Morocco, etc., on the southern coast of the Mediterranean; and these carry the cholera back with them.

From Alexandria all the great Mediterranean steamship lines now convey the disease to Constantinople, and up the Danube into Austria; to Malta, Ancona in Italy; Marseilles in France; Barcelona in Spain; to Tunis and Algiers; to Gibraltar, and up to Southampton in England. From Marseilles it is carried up to Paris, thence distributed to Belgium

and Holland, and over to England and Ireland; and thence from Havre to America.

The cholera which comes through Northern Persia and Central Asia generally originates at Hurdwar; that which travels up the Persian Gulf and the Red Sea almost invariably comes from Bombay.

Cholera has always pursued these great routes, but sometimes doubles back on itself. Thus the disease has been carried by ships down to the island of Mauritius, and thence to Zanguebar on the eastern coast of Africa, whence it has been transported by slave-ships up to Muscat on the Persian Gulf, and from there down to Bombay.

In the China Opium War, the disease was carried by English troops from Calcutta, by ships, to the island of Chusan on the China coast; thence to Nankin, Pekin, and the great Chinese border trading-town of Kiatcha, where all the Russian caravans from Orenburg congregate. From Kiatcha cholera was conveyed to Orenburg, thence down to Khiva, Bokhara, Balk, Cabool, and thence down the river Indus into India.

The cholera of 1831 was conveyed from England down to Spain, Italy, the Mediterranean, and reached the Red Sea from the West. In the Russian War the disease was carried back from Algiers and Marseilles to the English and French troops on the coasts of the Black Sea.

Cholera is generally brought up from Persia to Trebizond, on the southeast coast of the Black Sea, and thence distributed to Southern Russia, Odessa, up the Danube, and down to Constantinople. But the disease has reached Constantinople by steamships from Alexandria, and thence been transported east to Trebizond, and thence scattered down into Asia Minor and Persia.

We have already seen that the cholera of 1832 forced its way from Canada along the St. Lawrence and the lakes, down the Mississippi to New Orleans; while the epidemic of 1848 and 1849 reached New Orleans first, and then travelled up the Ohio and Mississippi Rivers toward the lakes and Canada.

ART. II.—*Abscess of the Appendix Vermiformis.* By LEONARD WEBER, M. D., New York.

THE pathology of the appendix vermiformis was an unexplored field in former years, and no proper distinction was made between abscess in the ileo-cæcal region, resulting from typhlitis, perityphlitis, or ulceration of the appendix. The true character of the disease has been studied more carefully in our times, and its literature, if not complete, is of considerable extent.

Literature.—F. M. Fannell (*Edinburgh Medical and Surgical Journal*, 1831), in a paper on phlegmonous tumors of the right iliac fossa, refers to two fatal cases of gangrene of the appendix vermiformis, in which the gangrenous process was found to terminate abruptly at the junction of the appendix with the cæcum. The subject is further developed in the following papers: John Burne, *Med.-Chir. Trans.*, vol. xx., p. 201, and vol. xxi., p. 23. Merling, M. D., "Thesis on the Pathological Anatomy of the Appendix Vermiformis," Heidelberg, 1836. Posthuma, M. D., "Thesis on the Pathology of the Cæcum and its Appendix," Groningen, 1837. Grisolle, M. D., *Arch. Gén.*, 1839. Voz, M. D., *Gaz. Méd. de Paris*, 1843, reports ten cases, but three of which, however, are evidently cases of disease of the appendix. Marchal de Calvi, *Annal. de Chirurg.*, 1844. Volz, in a paper entitled "Perforation of the Vermiform Appendix by Fæcal Concretions," Carlsruhe, 1846, gives the history of forty-nine cases, of which thirty-nine terminated fatally. Rokitansky, in a treatise on catarrhal inflammation of the appendix, makes a valuable contribution to the pathology of the organ. George Lewis, *N. Y. Journ. of Med.*, 1856, 3d series, vol. i., p. 328: "A Statistical Contribution to our Knowledge of Abscess and Other Diseases consequent upon the Lodgment of Foreign Bodies in the Appendix Vermiformis, with a Table of Forty Cases." Willard Parker, *N. Y. Med. Rec.*, March 15, 1867: "An Operation for Abscess of the Appendix Vermiformis Cæci." Copland's Encyclopædia, vol. ii., p. 230. E. N. Hennoch's supplementary volume to Canstatt's Special Pathology and Therapeutics, 1854, p. 535. H. Bamberger, Virchow's Manual of Special Pathology and Therapeutics; Diseases of the Chylopoetic Viscera, vol. vi., part i., p. 359.

Anatomy of the Appendix Vermiformis.—The appendix vermiformis is a small, hollow, cylindrical, worm-like process, varying from one to five inches in length, having its origin, with rare exceptions, from the posterior inferior and inner side of the cæcum, a short distance from the ileo-cæcal valve, and ending in a blind extremity like the cæcum. In two cases, observed by J. Burne, it was attached to the posterior inferior and outer portion of the cæcum. Its diameter and length present considerable variety; it is attached to the cæcum and iliac fossa by a triangular fold of the peritonæum, which generally extends only a part of its length. At its junction with the cæcum it is wider than in any other portion. It has the same number of coats as the intestines, and its mucous membrane is studded with an almost uninterrupted stratum of closed follicles, and forms a valve-like fold at the point of communication with the cæcum. In its anatomical relations it presents many varieties, which in a pathological point of view are of much importance. Most frequently it is found near the brim of the pelvis, situated on the iliac fascia over the outer border of the psoas magnus muscle, coiled up behind the cæcum. Sometimes it descends vertically into the pelvis, sometimes it is turned upward and backward, encircling the cæcum, and extending up along the colon for four or five inches. In one instance, Cruveilhier saw its free extremity in contact with the inferior margin of the liver. It may also be turned forward toward the bladder, be entangled in the mesentery, or in contact with the abdominal parietes. In cases still more rare it has formed the contents of inguinal hernia, strangulating the protruded intestine by adhesions of its extremity to the pelvic fascia. When the appendix extends up and along the colon for four or five inches, we must be prepared to find the tenderness and circumscribed swelling above the iliac fossa. When it lies behind the cæcum, upon the fascia iliaca, its inflammation and abscess become of less importance, because the peritonæum is not involved, and the direction of the abscess is toward the outer margin of the quadratus lumborum muscle, where the parietes offer but little resistance. The last two positions of the appendix occur very rarely. The normal opening of the appendix is small, and its cavity contains a little mucus.

Pathology.—Numerous cases are recorded of substances found in the appendix of people dead from other diseases, who during life had no symptoms directing attention to this organ. Dr. Blachardier (*Ed. Med. and Surg. Journ.*, vol. xxii.) discovered, in the appendix of a person dead of phthisis, an earthy concretion the size of a marble, who during life was never heard to complain of any uneasiness in the region of the colon. In the *New Engl. Med. Journ.*, 1843, we find the record of an appendix exhibited at the Boston Pathological Society, which had been taken from the body of a man dead from pneumo-thorax, at the age of eighty-eight years, and contained one hundred and twenty-two robin-shot. There were no adhesions around the appendix in this case, and nothing remarkable in its appearance except its unusual length. It is stated that the man was excessively fond of game, and the shot found in the appendix were supposed to have been contained in the game eaten.

The fecal concretions found in the cavity of the appendix are either semi-solid or of a stone-like hardness, are roundish, oblong or oval in shape, sometimes two or three in number. When fresh, they are of a grayish-brown color, viscid, and have a decidedly fecal odor. When dry they appear, on section, to consist of a central nucleus with concentric laminæ around it, all of the same composition, viz., phosphate and carbonate of magnesia and lime, etc. Looking very much like fruit-seeds, they have often been mistaken for the same, although they consist mostly of nothing but the ingredients of the human fæces. To explain their origin we must suppose that, by irregular contraction of the cæcum, a small portion of fæces is forced into the appendix, and there hardened to a concretion by gradual absorption of its fluid parts. The calculi so formed become a source of permanent irritation to the mucous lining of the appendix, inflammations gradually develop, and that portion of the mucous membrane particularlyp ressed upon by the calculus becomes thinner and thinner by ulceration. The ulcerative process further attacks the other coats, and finally perforates the peritoneal covering. But before perforation is accomplished, circumscribed peritonitis takes place around the inflamed parts, forming adhesions with neigh-

boring parts, especially the cæcum and omentum, and preventing, for a time at least, the dangerous perforation. By-and-by these adhesions will also undergo ulceration, and then perforation must occur at one or two points of the appendix corresponding to the two ends of the calculus. Should the ulceration eat around the entire circumference of the process, as has been observed in a few cases, it may even cut off the appendix by gangrene, the calculus remaining fixed in its extremity, or dropping into the abdominal cavity, where it may easily be overlooked in the autopsy. Tubercular, and more rarely cancerous, ulceration may cause perforation of the appendix in a similar manner. Although the point of perforation in the latter case may be very small, it will be sufficiently large to produce peritonitis.

In this way an abscess may form and grow to the size of a man's fist and larger, walled in by the previously-adherent neighboring parts, like the intestines, omentum, parietes, etc., containing pus that emits a strong fecal odor. The abscess having once formed, its contents will either become more and more solid by the gradual absorption of the fluid parts, leading finally to a firm, fibrous union of its walls, in which the calculus is embedded, with the laminæ of the appendix wholly or partly obliterated; or the ulceration encroaches upon the walls of the abscess, when perforation will take place either into the peritoneal cavity, rapidly followed by general peritonitis, or outward through the parietal muscles, or finally into the intestines. In the latter cases pus will be discharged per rectum, or find its way between the lumbar and abdominal muscles to the surface. With the pus the calculus may be discharged entire or in pieces. Some authors, as Aubry and Demaux, have seen perforation of this abscess into the bladder, vagina, uterus, even the acetabulum of the hip-joint, and the inferior vena cava. In case 42 of Dr. Lewis's collection the proximity of the diseased appendix to the right iliac vein had caused phlebitis. The coats of the vein were thickened and contracted below the appendix, and the vein filled by a thrombus in a state of decomposition; farther up above the process it was filled with fresh coagula. The patient's right leg became œdematous, as we observe it in phlegmasia dolens. Fatal

hæmorrhage into the peritoneal cavity, by erosion of smaller vessels, has been observed in one case by Henoch. When the abscess finds its way to the parietes, fistulæ will form either downward toward the pelvis, or upward toward the lumbar and venal regions. Secondary inflammation of the retro-peritoneal and pelvic-cellular tissue can occur, particularly around the rectum and kidneys, so that these organs also may be involved and perforated. Sometimes the suppuration and sloughing of the abdominal walls become so extensive, that they reach up to the cellular tissue of the thorax, and down to that of the lower extremity, when death may be caused by pyæmia. In several cases the abscess perforated the diaphragm, causing pleuritis,pneumonia, pneumo- thorax, and pericarditis. When, upon the presence of a foreign body in the appendix, inflammation and gangrene do not supervene, the mucous membrane, distended and thinned by accumulation of its own secretion, is gradually converted into a serous membrane, secreting a thin albuminous fluid, the appendix itself forming an hydropic sac. It is obvious that foreign bodies like orange-pits, cherry-pits, pieces of bone, etc., finding their way into the appendix, may produce the above pathological changes in the same manner as fecal concretions, though it is known that the latter are the cause of the ulceration in the vast majority of cases. All phlegmonous inflammations in the right iliac fossa are much more frequent in the male than in the female sex, notwithstanding the predisposition to intra- and extra-peritoneal inflammation met with in the puerperal state. This fact, too striking to be accidental, remains as yet unexplained. Marchal de Calvi lays down the relative frequency of the disease in the male and female as 32 to 4, Volz as 37 to 9, Bamberger as 20 to 4. Young subjects appear to be more liable than old ones. Of 30 cases, Bamberger saw 8 between the 10th and 20th, 12 between the 20th and 30th, 4 between the 30th and 35th year; but 2 were under 10, and 2 over 50 years of age, so that more than four-fifths occurred between the 10th and 35th years. As predisposing causes have been recognized, sedentary habits, indigestible food, habitual constipation, and different diseases of the intestines and peritonæum, by which the peristaltic motion of the former is

diminished, and the character and secretion of their mucous membrane altered; e. g., chronic diarrhœa, dysentery, displacement of the intestines, peritonitis, etc.

Course and Duration of the Disease.—Abscess of the appendix, like typhlitis and perityphlitis, can develop and run its course in very different ways. The disease may be ushered in with symptoms of inflammation of the cæcum, ulceration or perforation of the intestines, with general or circumscribed peritonitis. It can in quick succession present the symptoms of all these diseases; may be accompanied by slight pain or the most severe suffering; it may strike the patient suddenly, or, beginning slowly, may quickly place the patient's life in immediate danger, destroying it within a few days, or after an illness of weeks or months. By a thorough knowledge of the patho-anatomy of the parts, we arrive at a far clearer understanding of the disease than by enumerating a large number of cases. We will, therefore, endeavor to give a comprehensive view of this disease, and the usual course which it has been known to run in the great majority of cases. The disease begins either without preceding signs, or after abdominal disorders of more or less importance have existed for weeks and even months. The patient may have been troubled with painful colic for a long while, or have shown symptoms of inflammation of the intestines or peritonæum, or have been complaining for a few days or weeks before his illness of dull pains and soreness in the right lower part of the abdomen, confined to the cæcal region; obstinate constipation, with flatulence and frequent eructations, may alternate with diarrhœa—the patient always feeling worse when he has no eructations. The dull pain in the abdomen gradually or suddenly gives place to severe pains confined to the right iliac region. Or the disease may, and does by no means rarely, commence suddenly, the health of the patient having previously been perfect; he will be apt to look for the cause of his trouble in a sudden, violent twisting movement of the body, or a severe paroxysm of cough, or a sudden cold, in taking too heavy a meal, or in something indigestible, which he fancies he has eaten. Serious pathological changes may have occurred already, without causing any symptoms at all until he is seized

with an attack of the most excruciating burning or cutting pains in the entire abdomen, particularly severe in the right iliac region. Every movement or attempt at deeper inspiration increases the pain to an intolerable degree. In other cases the pain becomes less acute, the patient being able to walk about, but complaining of more or less severe pain on pressure upon the right iliac region. Almost simultaneously fever sets in, sometimes with a decided chill; frequently the patient begins to vomit on the very first day of his illness, throwing up fluid masses of a greenish color; he may be constipated in the beginning, or have diarrhœa, which will be usually followed by obstinate constipation. The abdomen will be found sympathetic, tense, hot, and painful; and in the right iliac fossa, along the lower end of the cæcum, or up toward the ascending colon, a tumor will be felt, causing the patient great pain even when he is quiet. There will be eructations of more or less bad odor, retching and frequent vomiting, impeded respiration due to increasing tympanitis, and a decided feeling of weakness and sinking. The tongue is usually coated, thirst great, urine of a dark color, perspiration suppressed. In the severer forms general peritonitis or perforation may supervene in a few days, with rapidly-fatal results, but more frequently the disease lasts from two to four weeks, and even longer. Meteorism of the abdomen may reach a very high degree, pressing the diaphragm and greatly impeding respiration. If the vomiting continue, the patient will freely throw up fecal masses. Pain about the bladder, with suppression of urine, increases the patient's suffering; the tongue is either thickly coated or dry, typhoid-like; the features pinched, giving the face an oldish look. There are also rapidly-increasing emaciation of the body, on account of the high fever, and the frequent vomiting of all the food that may be taken. Even when the patient is as low as just described, symptoms of amelioration may set in, but generally will not last long; he relapses, is soon worse, and, if he do not quickly die of perforation or general peritonitis, the final catastrophe may be brought about by absolute exhaustion, or paralysis of the respiratory organs, or pyæmia.

Symptoms.—The most prominent symptoms of the disease are: the tumors, the pain, the functional disorder of the intes-

tines, the signs of peritonitis and perforation, the secondary and constitutional signs. Let us keep in mind that all or most of these symptoms belong to typhlitis and perityphlitis as well, which will at once explain the great difficulty often met with in the differential diagnosis of these diseases.

1. The tumor, the most important, and characteristic objective symptom, appears in the right lower region of the abdomen, known as the ilio-cæcal region. By it we mean the space bounded by an upper line running on a level with and parallel to the anterior and superior spinous process and even a little above it; a lower one, corresponding to Poupart's ligament, but not quite so low, reaching outward to within an inch or an inch and a half of the spinous process, and inward more or less to the median line (usually from 2 to 3″ from it). The long diameter of the tumor would, if continued, form an acute angle with that of the body. The tumor can generally be felt quite beneath the integuments which are movable over it; the tumor itself is immovable, with a smooth and curved surface, moderately firm or quite hard, seldom fluctuating. Palpation is always very painful to the patient, sometimes accompanied by gurgling sounds; percussion over it yields a sound varying from an absolute to a moderate degree of dulness, with slightly tympanitic timbre. This tumor is formed of firm exuded masses around the vermiform process and cæcum, or in the cellular tissue of the iliac fossa (perityphlitis), the adhesions of neighboring intestines, and the fluid contained in the newly-formed cavity. The tumor will be absent only in those cases in which perforation occurs before adhesions have been formed. It may be hard to find the tumor when there is a large amount of fluid in the abdomen in consequence of general peritonitis, or when meteorism in the loops of the neighboring intestines has reached a very high degree. The tumor always develops rapidly, within one or a few days attaining considerable proportions; it decreases and passes away slowly if at all, taking weeks and not unfrequently months. The cæcum compressed by it may become impermeable for a time, when stercoraceous vomiting will take place; by pressure upon the nerves pain will be produced in the groins and right lower extremity, combined with a

sense of numbness, formication, and weakness; by compression or secondary thrombosis of the iliac and crural veins through the tumor, the extremity will become œdematous.

2. The pain is caused by inflammation and perforation of the appendix, cellulitis, and peritonitis, meteorism of the intestines, and tension of the abdominal walls. When the ulceration makes slow progress, pain may be slight or entirely absent, until the outer coats of the appendix are reached, when all of a sudden the pain may become very acute, owing to the peritonitis. It may be confined to the ilio-cæcal region, or extend over the abdomen more or less; is of the greatest intensity at the outset of peritonitis, and becomes less severe when exudation has taken place.

3. Of the functional disorders of the intestines, one of the most important symptoms is constipation, caused by compression of the cæcum, and paralysis of its muscular coat, owing to peritoneal inflammation and exudation. It is often exceedingly obstinate, and is not unfrequently the very first symptom of the disease. Very frequently diarrhœa follows, but seldom of a severe form, and not accompanied by much pain, and mostly followed again by constipation. When present it is due to hyperæmia and catarrh of the colon and part of the ilium, and can therefore appear at any period of the disease. The vomiting is also a very frequent symptom, when the disease is at its height. We must look, for its explanation, particularly to the impermeability of the intestines, the accompanying peritonitis, and the sympathetic irritation of the stomach. In some cases it causes great suffering, occurring ten or twelve times in twenty-four hours, either spontaneously or on taking medicine and food. The vomited matter consists of a watery, yellowish or greenish liquid, containing a good deal of bile, which soon exhibits a fecal odor, and finally stercoraceous masses are thrown up, often with momentary relief to the patient. Hiccough is also a rather frequent and painful complication, continuing almost without interruption for hours, even days, or recurring in intervals, greatly exhausting the patient. We must look upon it as a reflex symptom, but not as a sign of inflammation of the diaphragm.

4. Of peritonitis and perforation we have already spoken at length, and will only add that in cases of perforation and

accumulation of air in the abdominal cavity there will be, besides the symptoms of general and fatal peritonitis, the physical signs of air in the abdomen, viz., metallic sound on percussion, and in rare cases emphysema of the integuments.

5. The constitutional symptoms in their intensity depend on the form and extent of the accompanying peritonitis. At the beginning of the illness, and when there is but little peritonitis as yet, the fever is very slight, but very high when peritonitis has become general. Chills, as prodromata of pyæmia, may occur in the further course of the disease. In some cases we observe, as secondary symptoms, inflammation and suppuration of the psoas muscle, phlegmonous inflammation, with suppuration and sloughing of the anterior parietes, perinephritis, pelvic cellulitis and periproctitis. These latter complications may last for months after the abatement of the symptoms of the original disease, and in their own consequences may lead to a fatal issue. As further complications we may mention perforation of the diaphragm with pleuritis; pneumonia or pneumo-thorax with general anæmia and atrophy; pyæmia and metastatic inflammation, particularly erysipelas and pneumonia; icterus, thrombosis of the portal vein with abscess of the liver; secondary inflammation of serous and mucous membranes.

Diagnosis.—From the moment of the appearance of circumscribed peritonitis, all previous difficulties of diagnosis cease. The sudden pain, the characteristic tumor in the right iliac region, in connection with all the other signs, scarcely admit of a mistake; but it will be very difficult, even impossible in most cases, to recognize the disease in the often-protracted stage of catarrhal inflammation and ulceration of the appendix. The signs of this stage are frequently too slight, too little characteristic, to furnish valuable points for arriving at the correct diagnosis. Cases do occur, though, in which our suspicion is early aroused by a deep-seated pain, a constant sore feeling in the region of the appendix, combined with colic, and accompanied either by constipation or diarrhœa. To decide with absolute certainty whether in such cases the morbid process is going on in the cæcum or in the vermiform appendix, is almost always impossible; but being taught by ex-

perience that a majority of cases of circumscribed and general peritonitis originating in the right ilio-cæcal region do depend upon ulceration of the appendix, we shall usually not be far from right when, on the presence of severe symptoms of peritonitis of the above kind, we suspect the seat of the disease to be in the appendix. It will be all the more probable, when the individual has formerly enjoyed perfect health, or suffered passing pains without further disturbances in the ilio-cæcal region, and when the appearance of circumscribed peritonitis is sudden. With greater probability we may diagnosticate inflammation and ulceration of the cæcum instead, when there has been habitual constipation and palpable accumulation of fecal masses, or when we have reason to suspect the accumulation of foreign bodies like fruit-seeds, etc., in the cæcum; or when, from the knowledge of previous history of the patient, and the examination of other organs, we are justified in presuming the presence of tubercular or dysenteric ulcers in the intestines. That kind of perityphlitis, which is caused by inflammation of the cæcum and its appendix, is to be looked upon as part of the more important primary process, and therefore of inferior value in a diagnostic point of view. Should perityphlitis occur idiopathically (without coexisting disease of the intestine), it will be marked by far milder symptoms. Fever, pain, and vomiting, are much less severe and do not last long; the constipation is less troublesome, the meteorism mostly insignificant, and other signs of disease of the intestines absent. The tumor will not be felt directly beneath the parietes, but will be more deep-seated, and percussion will not give an entirely flat sound, except when the posterior wall of the cæcum has become perforated, and inflammation and exudation into the peritoneal cavity has taken place. Then the tumor will become more superficial, percussion dull, and we shall have, *cæteris paribus*, the same symptoms with those of ulceration of the cæcum. In perityphlitis the radiation of the pain in the right lower extremity with numbness is particularly marked, and the patient, when yet able to walk, will drag the right foot after him. An examination per vaginam and rectum must not be neglected, and is important from a diagnostic and therapeutic point of view.

The morbid processes which may be mistaken for the disease in question are the following:

1. Simple accumulation and impaction of fæces; this may lead to typhlitis, but is not typhlitis. Tumor not painful, more or less movable, disappears after evacuations; no symptoms of peritonitis.

2. Abscess of the psoas muscle; tumor more deep-seated, percussion over it tympanitic, extends more downward toward Poupart's ligament, nearer the median line of the body; generally no movements possible of the right lower extremity, which is flexed on the pelvis. Nothing wrong with the intestines or peritonæum. The formation of the abscess occurs very slowly, usually without much pain, its progress and spontaneous opening follow the course of the fascia iliaca, and takes place at the anterior and inner aspect of the thigh, or between the glutei and the hamstring muscles.

3. Tumors of the right kidney, or those caused by perinephritis, are situated above the ilio-cæcal region, with their bulk in the lumbar region, filling more or less the space between the false ribs and the crest of the ilium. They appear to be more deep-seated, and a superficial percussion will not give an entirely dull sound. Symptoms of kidney-disease will have preceded it, or yet be present; the intestines will be free of disease, or only sympathetically affected (vomiting). The movable kidney sometimes occupies pretty nearly the entire cæcal region, but is at once distinguished from abscess by its high degree of mobility, and the complete absence of pain or other symptoms of disease.

4. Cancer of the cæcum and colon is pretty rare, and almost always associated with cancerous deposits in other organs. Its development is very slow, the tumor knobby on the surface; the symptom of stenosis of the intestines are usually quite marked, and cachexia will soon be found an additional help to clear up the diagnosis. Nearly the same may be said of tuberculosis and cancer of the mesentery and retroperitoneal glands.

5. Intussusception of the intestines. It would be found exceedingly difficult to make an exact diagnosis here, if the intussusception and the tumor produced by it were exactly

seated in the ilio-cæcal region; but diarrhœa usually precedes this disease, and blood and mucus will be found in the stools. The signs of occlusion of the intestines predominate at the outset, a symptom which we observe in typhlitis usually not at first, and only in the severer forms of the disease.

Prognosis.—The disease may terminate in recovery, if the inflammation do not progress to ulceration; even after ulceration, a spontaneous cure may be effected by circumscribed adhesive inflammation of the peritonæum. Perforation having once taken place, spontaneous recovery is very rare, and death ensues either in consequence of peritonitis, or through complicating diseases. Among the possible disorders after this disease, constipation and diarrhœa are the most frequent. Very rarely do we observe permanent stenosis or an intestinal fistula. Dr. Bamberger saw such a fistula close spontaneously in the course of some weeks, leaving the patient perfectly well. Cold abscesses, more or less remote from the seat of the disease, may remain for a long while after, and even lead to a fatal end. The prognosis must be given with great caution, for we know that even in the lighter forms of the disease the most dangerous symptoms may develop within a few hours. Any circumscribed inflammation in the cæcal region must at once excite suspicion of ulceration, and demand immediate and most careful attention. The danger to life will not pass away until the pus contained in the abscess has either been absorbed or evacuated. When the peritonitis has become general, or symptoms of pyæmia show themselves, the prognosis is almost always fatal. Not a single recovery took place in the forty-seven cases statistically reported by Lewis; only ten recovered of forty-nine reported by Volz, while Bamberger lost but ten out of thirty cases of abscess in the ilio-cæcal region, under his treatment.

Treatment.—1. *Medical Treatment.*—As soon as, by examination of the abdomen, we have recognized the accumulation of fecal masses and foreign bodies in the cæcum, causing constipation and tympanitis of the intestines, we must try to evacuate them by enemata and purgatives. Of the latter, castor-oil, jalap, a few doses of calomel, or even croton-oil, are the most appropriate means, and preferable to senna and salts, for these are too irritating to the already diseased mucous mem-

brane of the intestines. No fecal masses having accumulated, but dull and increasing pain in the cæcal region manifesting itself, associated with colic, diarrhœa, or constipation, we must suspect the presence of ulceration, and at once enjoin absolute rest and quiet, and administer narcotics, particularly opium, to diminish the peristaltic motion of the intestines. When circumscribed peritonitis has already taken place, we must try to localize it as much as possible, to prevent perforation following the probably existing ulceration. Neither by the constipating action of the opium, nor by already existing constipation, should we then be induced to use purgatives or enemata, as they would be apt to lead to disturbance or separation of the newly-formed adhesions, and to perforation—dangers, which could not by any means be counterbalanced by the possible momentary relief these remedies might bring to the patient. Experience teaches that peritonitis, having once been checked or removed, constipation soon ceases spontaneously; even while the opium is being administered, liquid stools occur, if the disease take a favorable course. According to the intensity of the symptoms an adult should take from one-half to one grain of opium in intervals from one to three hours. The best authors on the subject expressly state that this method is recommended by Stokes, Graves, Volz, and others, as preferable to all others. Prof. Bamberger, who has practised this method exclusively, has, as mentioned above, lost but ten patients out of thirty, while in Dr. Volz's statistical paper on the subject we find that, of thirty-eight patients treated antiphlogistically, only one recovered, while of the other eight cases treated with opium all got well.

According to the degree and intensity of the peritonitis, a corresponding number of leeches will have to be applied to the ilio-cæcal region, followed by warm poultices; and Bamberger does not hesitate to employ mercurial ointment besides. General depletion, formerly much used, has been discarded; the same rules hold good when peritonitis becomes general. Against the severer forms of vomiting, ice in small quantities, or carbonic-acid water, may be given with advantage, besides the narcotic remedies. The diet of the patient must be regulated with great care, even down to the period of convales

cence; for a slight attack of indigestion may sometimes lead to a fatal relapse. The patient must not be allowed to move at all, as long as there still remain any vestiges of peritonitis.

2. *Surgical Treatment.*—Although Piossy's general advice to puncture the abdomen to evacuate exuded masses, in cases of peritonitis, has been followed by others in the local treatment of abscess of the ilio-cæcal region, it has met with no apparent success, and I do not know that prior to the publication of Dr. Willard Parker's paper on the subject any surgeon had made the attempt to assist Nature in evacuating abscess of the appendix without detriment to the patient's life; and in no published case had any thing more been done than to make incisions when the abscess had reached below the integument. Dr. Willard Parker, in his paper mentioned above, communicated to the profession a new mode of operation for abscess of the appendix, giving the history of one case in which it was followed by a speedy and complete cure. Speaking of the treatment, he says: "The matter of local treatment, however, has attracted my attention for many years. These questions presented themselves: Are the efforts of Nature exerted in behalf of a cure, and if so, in what way? Observation indicates the reply, and experience verifies its truth. Nature does labor in behalf of life, in two ways: 1. By means of the wall of false membrane, which she builds up around the abscess; and 2. By the ulceration, which gives an external vent to the escape of its contents. This being settled, it became a question whether surgery might be able to render assistance to Nature in this work; and if so, at what period would interference best come in? In what has gone before it would seem that in some cases no adhesions are formed, and general peritonitis quickly carries the patient to the grave. It is obvious, in these cases, that surgery can be of no avail. It has likewise been seen that many cases are prolonged beyond the fifth day. In these we have evidence of an adhesive inflammation, and we know that the next step in the progress of the case will be ulceration. The only danger now to be feared is that, before ulceration can fully accomplish its purposes, the presence of the accumulating pus will break through the recently-formed adhesions, and the event will be the same

as if no adhesive inflammation had taken place. Just here, if at all, the office of the surgeon becomes necessary; for by making a full incision down to the point where pus is collected, we have a method by which we may supersede Nature in its slow progress of ulceration. By this means the pus will escape as soon as it is formed; consequently there will be no pressure upon the recent adhesion, and, even though weak, they will be strong enough to answer all the purposes for which they were created. The time for making the incision is a matter of great importance. To be successful, it is necessary that it should be made neither too early nor too late—not before adhesions are fully formed, nor after a short period before the maximum formation of pus has been reached; that is, the incision should be made after the fifth day, and before the twelfth.

"Reasoning thus, I had convinced myself of the practicability of an operation in cases of abscess of the appendix vermiformis. Of its safety there could be no doubt, for there was no danger in the division of those structures through which the incision would pass. That it is perfectly justifiable I had no doubt; for, taking into consideration the two possibilities of any case, I could find no reason why the operation should not be performed. The first of these was where the diagnosis had been clearly made out. This has been sufficiently dwelt upon in the foregoing paragraphs. The second was in those cases in which there was doubt as to the diagnosis. If no abscess had already formed, in case one should be in process of formation, an external opening would tend to make it point in a safe direction. And, even if no abscess should form, a free incision would relieve tension, thus adding to the comfort of the patient, and in no way prejudicing his safety. One other question remained: Would the operation be successful in bringing about a cure? Judging from the result of the three cases reported above, an affirmative answer seemed certain; for these recovered because in each one Nature had provided for an external discharge of the contents of the abscess, and what Nature had provided for in these three, an operation would provide for in all cases. These theories received final confirmation in the results of the case, the report of which follows:

"J. D., aged forty, strong, of full habit, was attacked with pain in the bowels at 4½ A. M. Friday, January 12, 1866. He has been more or less subject to severe attacks in the bowels for some years. The night preceding the present attack, he had been out with friends and had eaten a late supper. At 5 A. M. he vomited, and felt some pain in the right iliac fossa. At 8 he took coffee and toast, after which he went down-town. During the day he had no appetite, and took no food until evening, when he ate a little cold chicken. There was no movement from the bowels during the day. In the night he had nausea. On the 13th he arose early, having passed a restless night. After breakfast he took two blue-pills. During the day he suffered from pain in the right side, which was relieved by bending over to that side. On the 14th, there being as yet no movement from the bowels, he took a glass of Saratoga Empire-water. Pain and restlessness and nausea still continued. Mustard was applied over the affected side. This evening he had an inefficient movement from the bowels. On the 15th the above symptoms increased in severity, continued, and in addition he was troubled with eructations. In the evening his family physician, Dr. Sabine, saw him, and ordered opium and a blister to the affected side, also leeches. On the 16th I saw the patient, in consultation with Dr. Sabine. We found him with a thickly-coated tongue; no appetite; nausea, and a constipated state of the bowels; pulse inflammatory, ranging over 100; skin dry and feverish; abdomen tumid and resonant on percussion; pain in the whole abdomen, but more decided in the right iliac fossa. Over this was a circumscribed tenderness, the boundaries of which could easily be marked out by the fingers. Micturition painful, pain also extended down the right thigh, and to the right testicle, which was drawn up. He was lying with his right thigh flexed on the pelvis, which position gave him some relief. The case was diagnosed as probably abscess of the appendix vermiformis. To render it certain, however, that there was no internal hernia, intussusception, or impaction of fæces, and, to clear up the diagnosis, we ordered calomel grs. xv, and opium grs. iij, to be given in three doses. On the morning of the 17th ol. ricini ℥j, with tr. opii. gtt. xx, were administered, and operated

freely, a large quantity of scybalous fæces coming away. The immediate effect was an amelioration of all the symptoms. The pulse became soft, and fell to 80; skin moist; tongue less coated; some return of appetite; abdomen less tumid, and the pain became definitely circumscribed in the right iliac fossa. On the 19th his symptoms indicated a return of his former condition. During the day he was kept under the influence of opium; and on the 20th, finding his symptoms more unfavorable, his exact condition was explained to him, and the operation proposed. It was, with his consent, decided that if on the next day there should be no improvement, it should be performed. On the 21st, there being no change for the better, but if any thing for the worse, and it now being the ninth day of the attack, it was decided to operate as soon as practicable. An injection of catnip-tea was given to relieve the bowels of wind, and at 2½ P. M., assisted by Drs. Sabine, Sands, Thomas, and my pupil, Mr. Wynkoop, I commenced the operation.

"An incision 6″ in length was made through the integument, commencing above and about 1″ from the anterior superior spinous process of the ilium, running toward the symphysis pubis. About one inch of the incision was above an imaginary line drawn from one anterior superior spinous process to the other, and 5″ below. The incision was continued carefully down, and all the structures found to be healthy, until the fascia transversalis was reached, which was found to be thickened. This was divided over a director, and right beneath a tumor was felt, which was about 2″ long and 1½″ in width. An exploratory needle was introduced, when immediately there gushed up some thick, bad-smelling pus. The sac was now freely opened, and about four ounces of pus, in which there may have been a little fæces, discharged. A tent was introduced into the cavity, and the wound left to close up by granulations. The patient rallied well after the operation, and passed a good night. The next morning he was in a quiet condition; pulse 84, soft; tongue more moist; abdomen soft; but little fever; wind escaping freely from the bowels; wound discharging healthily. The after-treatment consisted entirely of rest, opium, and nourishment. Perfect recovery

took place in three weeks, and at the date of writing (December, 1866) he is enjoying perfect health."

In my own practice, I have met so far with nine cases of abscess in the ilio-cæcal region, of which seven were males and two females. I will content myself with stating that among them there were three hospital cases, and two in private practice, which I saw during the years from 1861–'66, none of which I observed from the beginning, but which came under my treatment after large accumulations of pus in the ilio-cæcal region had already taken place. Three of them died under symptoms of perforation and general peritonitis; the other two got well after the abscess had been opened, but as the previous history of these two cases was incomplete, and no foreign body or calculus was finally discharged through the opening, it would be impossible to say whether it was typhlitis, perityphlitis, or ulceration of the appendix, that caused the abscess. In 1866 I treated two cases of abscess in the cæcal region, caused by typhlitis and perityphlitis, one in a boy aged ten years, the other in a lad fifteen years old, both of which recovered—the abscess perforating the intestinal wall and discharging its contents per rectum.

In the summer of 1866 a gentleman, Mr. D., aged thirty-five, called at my office on a Tuesday, at 4 P. M. He complained of a dull pain in the right ilio-cæcal region; ordered a dose of oil to evacuate his bowels, which had been constipated for two days previous, and advised him to stay at home. On Wednesday morning the pain worse, and more extended, in spite of sufficient stools having passed. Administered opium, applied leeches and poultice, on account of decided symptoms of local peritonitis. On Thursday, peritonitis became general, symptoms of perforation set in, and death ensued on Friday afternoon. The autopsy on Saturday, made twenty-four hours after death, in the presence of Drs. Jacobi, Krakowitzer and others, showed a perforated ulcer of the enlarged vermiform appendix, of the size of a nickel cent.

E. H., aged twenty-two years, called at my office on Tuesday, March 29, 1870, at 3 P. M. He looked pale and fatigued, had not had a stool for two days, had no appetite, and complained of some pain in the right iliac region. He had never

been seriously ill before. On examination, I found the patient free of fever, no feeling of increased pain on pressure over the cæcal region, had had no previous trouble with his bowels, the latter having been generally regular. A dose of ol. ricini, which the patient took in the night between Tuesday and Wednesday, produced one small and unsatisfactory evacuation, but did not relieve his pain. He rested badly during the night, and on Wednesday, about 10 A. M., he was suddenly attacked with the most violent symptoms of local peritonitis, great pain and tenderness in the abdomen, but particularly the cæcal region, tympanitis, small and rapid pulse; his countenance wore an exceedingly anxious expression, features pinched, etc. No tumor could as yet be felt in the cæcal region; no stools whatever produced by enemata. Having been quieted by opium, and restored from threatening collapse by the administration of stimulants, he was removed from his boarding-place to the house of his relatives on the following day. Vomiting of liquid, greenish masses, containing a large amount of bile, set in on the same day, although occurring at rather long intervals. Opium and brandy were continued, and in the night from Thursday to Friday, and leeches were applied to the ilio-cæcal region, which greatly relieved the pain, and contributed, I think, toward localizing the peritonitis. Patient being no better on Friday, consultation was had with Drs. A. C. Post and Krakowitzer, when it was found yet impossible to arrive at a precise diagnosis, because no tumor could yet be felt, nor had any evacuations taken place. In the night from Friday to Saturday, the vomiting took on a stercoraceous character, which, though increasing the difficulties of diagnosis, did not change the condition of the patient for the worse. Tympanitis of the abdomen slowly increased, pushing up the diaphragm, and somewhat impeding respiration, but the other symptoms of peritonitis appeared to be controlled by continued doses of morphine, administered by the mouth. During Saturday the characteristic tumor could be felt developing, though it could not be distinctly defined before Sunday evening. On Monday morning it was sufficiently circumscribed to leave no doubt of its character after a careful examination, and, although no evacu-

ation from the bowels had yet been obtained, we could with the greatest probability determine the disease to be abscess of the appendix. Dr. Post drew our attention to Dr. Parker's surgical operation in a special case of this kind, and, upon the second consultation in the afternoon of the same day, it was determined to wait no longer than the next day to perform the operation. The patient and his friends having been informed of his condition, and their consent obtained, we proceeded to perform the operation, according to Parker's method. On Tuesday, April 5th, the seventh day of patient's illness, at 11 A. M., patient having been put under the influence of chloroform, an incision 6″ in length was made through the integuments, commencing above and about 1′ from the anterior superior spinous process of the ilium, running toward the symphysis pubis, forming a somewhat curved line, with its convexity downward. The incision was continued carefully down, and the muscular fibres separated more with the finger and the handle of the scalpel than with the cutting edge, until the fascia transversalis was reached. Finding the latter, as well as all the structures previously divided, perfectly healthy, and not detecting any fluctuating tumor by pushing the finger up toward the fascia, it was determined not to go any further for the present, but to trust to Nature's efforts to evacuate the abscess toward the point of least resistance. A tent was put in the centre of the wound, resting with one end on the fascia transversalis, and the wound closed from both ends by harelip sutures, great care being taken to lay them well under the aponeurosis of the external oblique muscle, to guard against any possible future development of ventral hernia. A central space of about one and a half inch in length, containing the tent, was left open. Patient rallied pretty well from the operation, continuing to be kept under the influence of opium and brandy. In the night from Wednesday to Thursday, a spontaneous evacuation from the bowels took place, with great relief to the patient, and to our own satisfaction; and during the night from Thursday to Friday, exactly two and a half days after the operation, the abscess opened into the wound, discharging at the outset from four to six ounces of thick, bad-smelling pus. On Friday morning, though very weak, patient

was in all respects better; he began to take food readily, the vomiting had previously ceased, and stools occurred spontaneously, or could be easily produced by enemata. The abscess continued to discharge freely, the wound doing well, all pain in and around it having entirely ceased. On dressing the wound, on the sixteenth day after the operation, I found the *quod erat demonstrandum* of our diagnosis, in the form of a small, oblong calculus, lying upon the granulations. The outer coats of the calculus were soft, of a brownish color, and a decidedly fecal appearance; its centre was rather hard, and in shape and form very much like an orange-pit. At the end of six weeks from the operation the wound was entirely healed, and the patient well. He soon regained his strength, and is now as well as he ever was.

ART. III.—*Paralysis of the Fifth Cerebral Nerve, and its Effects.* By HENRY D. NOYES, M. D., of New York, Professor of Ophthalmology in Bellevue Hospital Medical College, Surgeon to New York Eye and Ear Infirmary, etc.

SINCE the time of Magendie the lesions which accompany paralysis of the fifth or trifacial nerve have greatly attracted the attention of physiologists. His experiments on animals were repeated by Bernard, Snellen, Meissner, Büttner, and others, and the same phenomena have been repeatedly observed in the human subject. These symptoms are, in brief, loss of sensibility in the cheek, the side of the head, and upper part of the neck—in the corresponding half of the buccal and nasal cavities, and in the eyeball and conjunctiva, and, in addition, loss of power in the muscles of mastication. As a consequence of the impaired innervation, the side of the tongue sometimes loses its epithelium, and the gums may ulcerate, and an offensive discharge take place from the nose, and the cornea often undergoes suppuration and destruction.

The injury to the cornea has been the feature which has excited the greatest interest. The precise reason why it occurs has not been uniformly agreed upon. By some it has been thought to depend upon the intrusion of foreign bodies

which are not perceived by the patient, but may irritate the eye, and excite keratitis. Others claim that the lesion is the simple result of the nerve-injury. Others assent to the neural explanation, yet do not admit that the sensitive fibres of the nerve are at fault, but that the cornea is damaged only when fibres of the sympathetic contained within the nerve have been destroyed.

Again, the cornea, it has been asserted, would be inflamed only when the injury included the Gasserian ganglion. It would appear from some cases that a morbid process in the peduncle of the cerebrum was competent to cause the trouble when the ganglion of Gasser was intact.

My attention has been called to this subject by having had some experience with these cases, and at the present time I have one under observation, which I propose to relate in detail. To other cases I shall briefly allude.

Before narrating my case, I may call attention to an interesting article by Dr. Rosenthal, in the *Medizinischen Jahrbücher*, Band xix., Heft ii. and iii., S. 163, 1870, on "Symptomatology and diagnosis of tumors at the base of the brain, and of the pedunculus cerebri." Two cases are given and their autopsies, and the title of the one appropriate to my present purpose is: "Chronic headache and vertigo, paralysis of the right trigeminus nerve (anæsthesia dolorosa), of the ocular muscles, of the right facial nerve (loss of farado-muscular contractility, and preservation of galvano-muscular contractility); sloughing of the cornea; slight paresis of the left leg; carcinoma at the base of the brain, lesion of the ganglion of Gasser." I beg leave to quote certain features of the case which seem worthy of attention. The fifth and seventh nerves of the right side were fully paralyzed. The mucous membrane of the mouth as well as of hard and soft palate, tonsils, pharynx, gums, and tongue, was insensible, so was the right nasal cavity. A bad odor and salivation proceeded from the mouth. The conjunctiva was insensible, and the lids could only be partially closed. The lower half of the cornea was perforated and suppurating. The anæsthesia of the cheek was limited posteriorly by a line drawn from the angle of the mouth obliquely up and backward to the auricle and the top of the occiput. In front

of this line there was no feeling; behind it there was a dull sensibility. The conjoined affections of the seventh and fifth nerves gave a double reason for the destruction of the cornea, and, in fact, the whole globe was collapsed to a stump. While there were the ordinary symptoms of facial paralysis, the electrical reaction was as follows: to the primary galvanic current only the frontalis and zygomaticus major responded; all other muscles refused to contract. Neither could faradization excite contractions. The facial nerve twigs indicated less capability of reaction. The glands in the right side of the neck were enlarged, and there was incipient infiltration in the parotid region. Smell and taste were manifestly more feeble in the right than in the left side. The patient suffered greatly from pain in the anæsthetic cheek, and the headache was almost intolerable.

The diagnosis was made of tumor at the base of the brain, not implicating the pons varolii or crus cerebri, because there was no paralysis of the limbs, and that it affected the ganglion of Gasser, because the eye was destroyed.

The tumors on the side of the neck were neither syphilitic nor tuberculous—the patient was too robust for scrofula, and fifty years old, and, as the parotid region was becoming indurated, the tumor was regarded as cancerous.

At the autopsy, a mass, as large across as a dollar, was found in the middle fossa of the base of the skull which passed by the sinus cavernosus into the apex of the orbit, which sent prolongations through the enlarged foramen ovale and foramen rotundum into the hiatus Fallopii. The tumor included a part of the ganglion of Gasser, nearly all the trigeminus, together with the motor oculi, the trochlearis, the abducens, and the petrosus superficialis major. The structure of the tumor was a dense stroma of connective tissue, with a few scattered cells, a sarcoma.

In this case implication of the ganglion of Gasser confirms the notion that this is important to the destructive changes of the cornea. A case related by A. Beveridge, M. D. (*Medical Times and Gazette*, 921, 1868, p. 199), supports, he thinks, the same view. But experiments by Afanasieff (*Wiener Med. Wochenschrift*, No. 10, 1870) show that section of the crus

cerebri without injury to the Gasserian ganglion is followed by the same result. Samuel, quoted by Vierordt in his work on physiology, p. 330, 3d edition, says that mere irritation of the Gasserian ganglion has sufficed to provoke the injury to the cornea.

Case of child two years old, in Graefe's clinic, *Archiv für Oph.*, B. 3, Abth. 2, S. 428, with paralysis of fifth, sixth, and seventh nerve. At the autopsy the cause was found in a tumor the size of a walnut, growing within the pons. There was no observable lesion in the ganglion of Gasser. The tumor was of tuberculous character, and the lungs were full of tubercles.

That the injury to the cornea is chiefly owing to the interruption of the power which the fifth nerve has to sustain its nutrition, is shown by clinical facts, but that special exposure to irritating causes will precipitate the disaster has been shown experimentally by Schiff upon toads. In those which after section of the fifth nerve were kept in water, the eye remained clear; in those which were left upon coarse sand the cornea became inflamed. If the eyelid on the sound side were taken away, and the eye sprinkled with sand, there was no suppurative inflammation.

It will be pertinent in this connection to quote a case reported by Snellen, and brought forward by Mr. Wells in his treatise on diseases of the eye, p. 103. A man, thirty-six years old, had paralysis of the sixth and fifth nerves of the same eye. He had in consequence a convergent squint, and on the outer side of the cornea was a superficial ulcer, surrounded by a tolerably broad, gray zone. The eye was quite insensible, and the acuteness of vision diminished to $\frac{11}{200}$, and its tension was much decreased. To ascertain with certainty whether the affection of the cornea was due to mal-nutrition of the eye, or to its exposure to external irritants, Snellen fastened by means of strips of plaster a stenopaic shell over the eye in order to protect it. The shell was removed twice a day, in order that the eye might be washed and cleansed. Improvement in the condition of the cornea, and of the sight, was very marked, for within two days vision became $\frac{20}{70}$, and the cornea cleared so rapidly that in eight days the acute-

ness of vision was normal, viz., $\frac{20}{20}$. Only a small opacity remained at the outer side of the cornea, but the loss of sensibility and the diminished tension continued. The shell was left off, and the eye exposed: within two days the eye became again more inflamed, and vision became diminished to $\frac{20}{100}$. It shortly regained its normal standard after reapplication of the shell.

The cornea may preserve its integrity for a long time after paralysis has taken place. Some special disturbing cause seems necessary to induce the inflammatory process. An instance of this kind was a youth about fourteen years old who came to the New York Eye and Ear Infirmary, and was under care of Dr. H. B. Sands. He had had paralysis of the fifth nerve for several years, as not only was he, but also his brother, who was a physician, able to testify. At the time when I saw him the cornea was suppurating. The reason for this occurrence seemed to be that he had been out of doors during extremely cold weather, for the thermometer at that time ranged about 20° below zero of Fahrenheit.

Possibly if his eye had been bound up, he might have successfully resisted the depressing effect of the cold.

If the disease has made considerable advance, protection of the eye does not suffice to arrest it. In truth, prognosis then is highly unfavorable. I have seen, it may be, five or six cases of this kind, and in all but one the eye was destroyed.

I will relate the history of two cases, one of which shows how unavailing was the effort to save the eye by various protective devices; and the other, which I exhibit to your notice, has a more cheerful interest because the treatment has proved of signal benefit:

Case I.—*Paralysis of Fifth and partially of Seventh Nerve. Suppuration of Cornea; Loss of Eye; Death.*

April, 1869.—Michael McC., aged thirty-three, Ireland. A robust, rather plethoric man, who never had syphilis nor rheumatism. Is a milk-dealer, and is engaged at his business from two to eight o'clock in the morning.

For a year had severe and persistent headache on the right side, sometimes a little dizzy, had no nausea. Eight months ago, after a severe attack of pain running from the right ear to

the top of the head, found the right half of the face numb. Three months ago right ear became deaf, had tinnitus; and within a month hearing is a little better. Within a month noticed that lids did not shut so perfectly over right eye as before. Within two weeks this eye became sore.

About two years ago had a tumor called cancerous removed from the right half of the lower lip by means of caustic paste. There is now a deep notch, but no sign of morbid infiltration.

There is complete insensibility to touch on the right side of the scalp as far back as the coronal suture, on the right half of the forehead and temple to about the middle of the zygoma; on the cheek in front of this region, as well as on the side of the nose and the lips. The side of the chin has been in the same condition, but has in part recovered. The right auricle and the neck for two inches below were insensible, but have within three weeks recovered. The conjunctiva is reddened and slightly œdematous, can be touched with entire impunity, the cornea equally obtuse, and for almost its entire surface denuded of epithelium, the tissue hazy; the pupil active, perception of light quick; a purulent discharge comes from the eye; there is no pain, no intolerance of light.

The right half of the tongue, and roof of the mouth and gums, and interior of the nostril, are anæsthetic. The senses of taste and smell are much impaired. A bad odor, as of ozœna, comes from the nose. For six months the right half of the tongue has felt as if it had been burnt. Is able to chew, but I find the right masseter extremely small; when he forcibly shuts his jaws the contrast is very strong between the full, hard belly of the left masseter and the flatness of the right.

Such are the symptoms of lesion of the fifth nerve, and they indicate the comprehension of all three of its subdivisions as well as of at least part of its motor root.

The signs of impairment of the facial nerve are, enfeeblement of the orbicularis muscle; that in laughing the right side does not draw up as much as the left. He can twist the face in some degree to the right side, and can make the tarsal edges of the eyelids meet, but the effort needful to do it wrinkles the eyelids of the other eye extremely. When not making special effort, the lower lid droops so that its border falls away

from the globe, and to a lower level than that of the other eye.

In the right ear the membrana tympani is transparent, the light spot normal; can see the inner wall of the middle ear, and that it has a deep-red color. Hearing damaged, so that a watch is heard only when it touches. Eustachian tube was not explored. Has no difficulty in swallowing nor in speaking. There is no impairment of sensation or motion on either side of the body. Vision of the left eye $\frac{2}{20}$; to the ophthalmoscope the optic nerve shows some hyperæmia and swelling; its edges are pretty clear.

The usual treatment for suppurative keratitis was employed, viz., atropia, hot fomentations, and paracentesis, besides the constant use of a bandage. On the third day of treatment, as the cornea was more deeply involved, I thought the progress of the malady might be promoted by the falling away of the lower lid from the globe because of the paralysis of the orbicularis muscle. To counteract this I excised a V-shaped piece of skin from the lower lid to shorten its tarsal margin, and united the wound by three sutures. There was no flinching by the patient during the operation, but he gave me assistance in using the sponge, and suffered no inconvenience. So, too, paracentesis was in no wise disagreeable to him. For twenty-four hours after the operation on the lid, atropia was discontinued, and then the pupil which had been fully dilated became small. After three days took stitches out of the wound; the union was complete, the lower fourth of the cornea covered by the margin of the lower lid, and the bandage now keeps the lids perfectly over the cornea. For a day or two there was some regeneration of the corneal epithelium, but the suppurative process went on until it reached an intensity which rendered destruction of the eye certain. For one day the eye was kept hermetically sealed by plasters and a bandage, but the disease then made more rapid progress than under the usual *régime* of hot water for half an hour every two hours and atropia sulphat. sol. gr. ij ad $\bar{3}$ j every two hours. For ten days the patient continued under my care, and then went under observation of Dr. Agnew, and was also seen by Prof. Hammond. In June, that is, six weeks afterward, I again saw him, and made the following notes:

The cornea is cicatrized and flat, having been entirely destroyed and sight lost, as I had predicted to the patient. He says he has for several weeks had continual giddiness, and sometimes feels as if drunk—has unnatural sensations in the left arm and hand. I find the right masseter muscle much atrophied, but above it near the jugum is a hard, firm swelling about the size of a small hickory-nut. Occasionally has sharp pain in the back of the neck.

My diagnosis of this case is that a tumor was growing in the middle fossa of the right side of the skull, involving the root of the fifth nerve and the ganglion of Gasser, with the facial and auditory nerves.

Since writing the above, I have learned that the patient died more than a year after I last saw him. His friends say that a cancerous growth formed on the side of the mouth alongside of the place which had been destroyed by caustic, and spread over the cheek and down the neck; that he had great difficulty in swallowing, that he had no additional paralysis, no convulsions, no disturbance of mind, but suffered greatly from headache, and died from exhaustion.

Unfortunately, there was no autopsy.

Case II.—The following case is one of paralysis of the upper two branches of the fifth nerve, and only partial affection of the third or submaxillary division. It has a special interest because of the striking benefit which has been derived from the galvanic current.

Amelia McC., aged seventeen, came to the New York Eye and Ear Infirmary October 14, 1870. The right eye had for five days been inflamed, and while there was moderately intense injection of the conjunctival and scleral vessels and the whole cornea was ulcerated, there was no expression of pain nor intolerance of light; I at once, from this passive behavior, suspected the fifth nerve to be at fault, and found such to be the fact. I could put my finger on the cornea and the conjunctiva without causing the patient to shrink. She had an eruption on the skin of the right half of the forehead and the side of the nose, as parts supplied by branches of the ophthalmic nerve—this continued for a few weeks, and disappeared. On inquiry, I learned that in August preceding a

numbness had befallen this side of the face and head after she had suffered from a severe headache—an attack much worse than any she had had before. There had been no other special symptoms, and the matter was considered unimportant. The inflammation of the eye came on spontaneously. I carefully examined the region of insensibility, and found it was terminated accurately by the median line of the face in front, that it included the upper lip, side of the nose, eyeball and lids, forehead and scalp nearly to the vertex, temple, and anterior two-thirds of the cheek. The chin, the cheek in front of the ear, and the auricle and neck, had sensibility, though in slightly diminished degree. The left side of the face perfectly natural. There was loss of sensibility on the right half of the tongue, the upper lip and gum and inside of the cheek, and the anterior pillar of the fauces. Sense of taste she did not perceive to be impaired. The right nostril could be tickled with impunity, and a Eustachian catheter did not excite resistance until it arrived at the soft palate. Contraction of the palatine muscles normal, and the masseter on the right side seemed as vigorous as on the left.

The nature of the corneal inflammation being clearly indicated, I determined to try the benefit of the galvanic battery, and sent the girl to Dr. Guleke, of Thirty-fourth Street, who kindly consented to conduct this part of the treatment. I directed, in addition, the use of sulph. atropia, of hot fomentations, and occlusion of the eye by a bandage.

The surface of the cornea was entirely stripped of epithelium to its margin, although its deeper tissue was almost transparent; iris and pupil could be distinctly seen. After three applications of the constant current, I was surprised at the improvement in the cornea. Although the inflammatory redness continued about the same, the epithelium had been regenerated all around its rim, making a circle at least one-tenth of an inch wide, and leaving a central bared portion about two lines across. During the following week the growth of epithelium continued, but less rapidly, and the injection of the eyeball diminished. The sensibility of the cheek improved, the posterior limit of the numb region coming a little forward. After this time the keratitis grew worse, the

central ulcer widened, and the tissue of the cornea became infiltrated with pus, and hypopion appeared. Two small abscesses formed in the cornea, and burst, leaving deep ulcers, the superficial erosion extended. The worst condition was reached in about the fifth week of the disease, and thereafter there was slow though uninterrupted improvement. Perforation of the cornea never took place, though it seemed imminent. There was for some time pus in the anterior chamber, but paracentesis was not resorted to. By the first of January the repair had gone so far that the lower half of the cornea was covered with whitish, opaque, thick epithelium, upon which were a number of vessels running from the limbus—the upper half of cornea quite clear. This dense opacity has subsequently grown thinner and more transparent, so that now (April 8th) one can easily see the pupil through it, and sight begins to return. The safety of the cornea can now be considered sure.

During the progress of the acute inflammation attention was directed to the state of tension of the globe. Experiments by Hippel and Grünpagen (*Archiv für Ophthalmologie*, xiv., 3, p. 219) upon cats poisoned by woorara demonstrated that irritation of the root of the fifth nerve in the medulla, and irritation of the nerve itself, produced an enormous increase of intra-ocular tension. This was assumed to be due to enlargement of and transudation from the vessels of the choroid, because the vessels of the retina were seen to be contracted. The increase of tension was independent of any influence of the sympathetic nerve in the neck, which may or may not have been cut.

Now a state of paralysis of the fifth nerve would be expected to be followed by diminished tension of the globe. During the period of acute inflammation, the eye was perceptibly softer than normal, but not to a striking degree. After recovery the globe returned to the same state of tension as the fellow-eye, so far as the finger carefully applied could decide.

While the eye was improving, the sensibility of the face equally increased. The dividing line between the numb and sensitive region ran from the middle of the zygoma to the angle of the mouth—this advanced farther upon the malar bone, so as to come within half an inch of the outer palpebral

commissure—but the side of the nose and upper lip remained insensible. The forehead also recovered down to the eyebrow, but the lids and conjunctiva are anæsthetic. It must be noted that the patient is always aware when firm pressure is made, although so indifferent to pain that she once blistered the cheek by applying scalding water, and did not know it. In examining the right ear I found the membrana tympani opaque, its epidermoid layer thickened, and the appearances such as belong to subacute otitis media. Watch heard only when it touched the auricle. The membrana tympani could be touched more roughly than the normal drum membrane, although it had sensibility. The meatus auditorius showed a diminished though moderate degree of sensation in all parts, except on a spot about the middle of the anterior wall nearly half an inch in length, which was entirely devoid of sensation. I was struck by this circumstance, and tested the fact several times to be sure of it. I am at a loss to give any anatomical explanation for it. The impaired hearing is evidently due to catarrhal inflammation of the middle ear.

The treatment by galvanization has been steadily kept up by Dr. Guleke, who has supplied the subjoined notes:

"Examination by the constant current shows loss of feeling on the right side in the first and second branches of the fifth nerve. The third branch does not show quite so much reaction as on the left side. Contraction of the muscles of the affected region is found weak on reversing the current, and most so around the eye and angle of the mouth. The interrupted current gives contraction of the muscles of the right side in the same degree as on the left.

"*Application.*—The positive pole applied to the ganglion superioris of the sympathetic on the right side of the neck; the negative pole near the eye, or on the forehead or cheek. The positive pole was changed to the spinous processes of the upper vertebræ, when the place over the ganglion was too much irritated. The strength of the current was from four pairs of cells to six pairs in the later period of treatment. The first three or four months the electricity was daily used, later the patient came about every other day. The length of each application was from three to four minutes."

The success which has attended the treatment in this case is worthy of note, because the tissue-changes in the cornea are so easily observed. I find another case like this in Dr. Althaus, on Medical Electricity, pp. 137 and 537.

The remarkable fact about his case is, that the fifth nerves of both sides were paralyzed, and not only were there the usual symptoms of numbness, but there was entire loss of the power of masticating. The temporal and masseter muscles were at one time so completely impotent that the jaw dropped, and the pterygoids were equally affected. His food had to be cut small, and then he would bolt it. The function of these muscles was recovered in part when the man came under care of Dr. Althaus, while the tongue remained anæsthetic, and in consequence frequently was bitten in eating, and presented a wretched appearance. The sense of taste was not destroyed, "but the secretion of buccal mucus was so excessive as to oblige the patient to have a pocket-handkerchief constantly applied to the mouth, in order to prevent the liquid running down the chin. The lips appeared covered with a sort of froth, such as we see in a patient who has just come out of an epileptic attack. Both corners of the mouth were very sore, being macerated by the constant flow of mucus. The reaction of the liquid was slightly alkaline." There was the usual offensive secretion from the nostrils, but smell was possible. Hearing was perfectly good, but there was severe tinnitus aurium. There were large leucomata upon both corneæ. The sight of the right eye almost destroyed. For a long time he suffered much from photophobia, which is remarkable. The secretion of the lachrymal glands appeared to have totally ceased; and the application of substances which usually excite a flow of tears, such as ammonia and mustard, had no effect whatever. There was, however, pathological secretion of conjunctival mucus, by means of which the eye was kept moist. Indeed, the cornea appeared covered with streaks and shreds of mucus which gave a death-like appearance to the eyes. This mucus was most probably secreted by those follicles which were first described by Prof. Krause, and which are situated beneath the conjunctiva where this membrane is reflected from the eyeball upon the lid.

This disease had befallen the man as a result of cold; no other nerves were implicated, and the brain was clear. The treatment by the galvanic current was begun some time after the beginning of the disease. The positive pole was placed upon the nape of the neck, while the negative one was gently passed along the peripheral ramifications of the nerve. After three months the condition was as follows:

Photophobia had entirely disappeared; the patient was able to leave off his eye-shade after the first few applications of the galvanic current. The tinnitus aurium was likewise almost entirely gone; it was only occasionally slightly perceived when the patient was lying down at bedtime. The opacity of the left cornea was considerably less. He reads No. 10 Jaeger, when at first he could only read No. 20. He was able to guide himself in the street, and could read the street-names at the corners, and the sign-boards of shops. Common sensation had to a great extent returned in the left side of the forehead, the right cheek, and the chin. In the other parts of the face it was still considerably impaired. The sense of locality in both sides of the face was reëstablished, for the patient could tell distinctly where he was touched or pinched. The sense of temperature had come back to some extent, for the patient was able to distinguish between heat and cold, although not so keenly as previous to the affection. The sense of touch had returned in the left side of the forehead, the right cheek, and part of the chin, as shown by the proper perception of the two points of the æsthesiometer. The secretion of tears and saliva had partially returned, while the excessive secretion of mucus had been considerably checked. The lips were no longer covered with froth, but quite dry. The lateral motion of the muscles of mastication was nearly reëstablished. The patient has been advised to continue the galvanic treatment, and I believe that the function of the fifth pair will in course of time be completely restored by it. He is now quite able to follow a light occupation.

I may be pardoned for quoting so much of this case, which is accessible to all my hearers, and perhaps well known to them, because it is so complete in its characteristics, is so admirably reported, and so well illustrates the benefits of gal-

vanic treatment. To this treatment it was especially suited, because the disease came from a peripheral and not a central origin.

A case of recovery after suppurative inflammation of the cornea had begun, is recorded by Hippel, *Archiv für Ophthal.*, Bd. 13, abth. 1, S. 53, and he alludes to a similar case of Mr. Dixon, in Medico-Chirurgical Transactions, 1845. In these cases only the usual methods of treatment were employed. In Mr. Dixon's case the symptoms afterward returned, and at the autopsy a tumor, the size of a walnut, was found on the root, and in the ganglion of the trigeminus.

Among some of the other effects of paralysis of the fifth nerve, are that the retinal and iritic vessels are enlarged, as seen by Marfel and by Schiff. In the case of Amelia McC., I do not find this symptom. It certainly does not exist in the diseased eye, nor is the circulation of the retina of the other eye abnormal. During the active keratitis the lachrymal secretion is almost absent. Yet patients thus affected are able to weep copiously, as is stated by Mr. Square, in Ophthalmic Hospital Reports, vol. v., p. 353. In my second case this is also true.

I have alluded to the fact that the eyeball in many cases loses tension, while physiological experiments have shown that irritation of the nerve greatly augments tension of the globe. A case of paralysis is related by Hippel, *Archiv. für Ophthalmologie*, B. 13, S. 63, in which the eye was hard to the touch, and he was also able to detect constriction of the visual field.

It may be stated, in conclusion, that destructive effects take place in the cornea when a part only of the trifacial nerve is paralyzed—as in my second case, when only the two upper branches are involved. It is not at all improbable that they would follow if the ophthalmic branch alone were impaired, but of this I know no instances. It is shown, by citations above, that these effects occur when the paralysis proceeds from a cause existing in the peduncle of the brain, or in the nerve behind the ganglion of Gasser, this organ not being injured; furthermore, when the ganglion is seriously damaged, and even when it is simply irritated without being destroyed,

the cornea is liable to suppuration. Exposure of the cornea to irritating or depressing causes favors its destruction, but the essential reason is ascribed to implication of sympathetic nerves incorporated in the trifacial.

The cause of paralysis may be peripheral, as in Dr. Althaus's case, and then recovery is more probable, and galvanic treatment most likely to be the effectual agent. But usually the cause is central, and in the greater number of cases is to be found in the growth of a tumor. Its situation is in the middle fossa of the base of the skull or in the brain. Of course the prognosis must in the end be death. Yet, the period when a fatal result is to be expected will be very uncertain. Even under these circumstances, galvanic treatment may afford valuable relief, and is eminently worthy of trial.

Clinical Records from Private and Hospital Practice.

I.—*Control of Hæmorrhage by Ipecac.* By WILLIAM MARTIN, M. D., M. R. C. S., Billingsville, Indiana.

April 1, 1871.—At 9 A. M. was called to see my friend Mr. W. D., a farmer, residing in the village where I practise, and upon inquiry found that entering his barn, with a long, rough-ended bamboo-stemmed pipe in his mouth, some hogs ran against his legs and he was forcibly thrown against a post, the pipe-stem entering his right tonsil to the apparent depth of two-thirds of an inch. Having examined the injury to tonsil, and remembering the close apposition of the internal carotid artery, I resolved, as there was then little hæmorrhage, on doing nothing but apply perchloride of iron on a sponge, being afraid if I made much exploration that I should cause bleeding from the anastomosing arteries, and thus cause trouble. No bad symptoms occurred that day, my patient only complaining of soreness in the muscles of the neck and face, caused no doubt by violence to ramifying branches of the fifth nerve.

April 2*d*.—I was sent for in a hurry at 6 A. M., and found my patient in a state of prostration and fear. Pulse 104, neck and tongue swollen, and positive jutting arterial hæmorrhage

from back and upper surface of wound, which altogether presented a most discouraging and alarming appearance. I should here state that headache was much complained of in the region of lateral meningeal arteries. Ordered twenty grains of hydrate chloral, and gargle containing one part in four of tinct. ferri muriatis.

3 P. M.—No change, except complained of suffocation, and on examining wound (and being *quite certain* that hæmorrhage was not from carotid) I gave two-grain doses of ipecac. every hour, till third dose caused *gentle vomiting*, and with it immediate contraction of tonsil (thus lessening wound), and causing hæmorrhage at once to stop.

10 P. M.—Anxious to let well alone, and kind Nature do her part, I left him comfortable as was possible under pains and losses, only administering twenty-five drops Battley's solution (liq. opii. sed.), well cautioning his wife to send for me if any change should occur, especially bleeding from mouth.

April 3d, 8 A. M.—Found my patient in same state of fever, much headache, and complaining of acute pains in region of sterno-mastoid, omo-hyoid, and scaleni muscles. Ordered full dose of ol. ricini, which, having acted, reduced *all* pains and partly the suffocating sensation, but left him (a powerful and naturally healthy man) greatly reduced and depressed. Ordered tablespoonful of whiskey every hour, and administered as medicine:

℞. Ammon. carb., ℈ij.
Tinct. cinchon. co., ℥ ss.
Aqua. ad., ʒ viij.
Ft. mistura et capiat cochleare ij 4tis horis.

9 P. M.—Found him, as his own familiar tongue expressed it, "bully," and, continuing the astringent gargle and tonic for a few days, my patient was left in his wife's hands to nourish, he having, indeed, had a narrow escape, and I spared a good patient who is now in perfect health, and, I believe, smokes the same pipe.

Remarks.—I report this case in honor of chloral and ipecac, and I am quite convinced, from the experience of nineteen years, that the theory and practice of my lamented teacher, Sir William Lawrence, Bart., that in such cases, where capillary

hæmorrhage occurs and the position of main artery dangerous, that after the administration of *small doses* of ipecac. until a *gentle* vomit is caused, natural plugging follows contraction of tissues, and safety is insured, for, in such case and under such treatment, muscular contraction *never* fails. I have tried it many times (even so late as last week) in obstinate contraction of uterus, and never experienced ill effects.

II.—*A Case of Facial Paralysis, successfully treated by Galvanism and Localized Electrization.* By Allan McLane Hamilton, M. D., New York.

Wm. O. Ingraham, aged thirty, United States, boatman. Previous history: He has never been seriously ill, but ten years ago he had a chancre, followed by marked secondary symptoms. The only other ailment was a severe attack of rheumatism, occurring three years ago—this was undoubtedly a tertiary symptom.

His present difficulty began three months ago; at night he was disturbed by intense cephalic pains, dizziness and disordered vision. For several days the pains were steady and most violent under either temple; he was also annoyed by post-aural pains. He then found that his hearing was becoming less acute till the lesion finally occurred. This took place toward the latter part of July, 1870.

He awoke in the morning and felt a pain in the head, attended by swelling and puffiness of the face. His attention was called by several of his associates to the "crookedness of his face." He looked in the glass and saw the drooping of the left side of the face, with complete paralysis of the muscles at the corner of the mouth; then followed total loss of hearing. He could not appreciate the loudest noises when the sound ear was closed. The paralysis increased every day. A few days after this, the eyelid drooped, and he found it impossible to open or completely shut the eye. It became congested and irritated, and he experienced a burning sensation, with photo phobia

His condition grew gradually worse, till he was compelled to leave his employment, and seek medical aid. He never had had otorrhœa or ear-affections of any kind, nor had been paralyzed. His habits were good, and his hereditary history favorable.

When he applied to me, I found paralysis of the entire seventh nerve, motor ocularius, and disturbance of the sympathetic of the eye. There was no antagonistic force of the orbicularis oris, levator labii superioris et alæque nasi, or masseter muscles. He could hardly insert the finger in the mouth without pulling down the jaw with the other hand. He experienced a difficuly in mastication and deglutition, from involvement of the left side of the tongue, which, when protruded, inclined to the right side; with this there was indistinct articulation, and I was led to infer paralysis of the lingualis muscle.

From the patient's previous history I was led to suppose that syphilis was the primary cause of the trouble, and, from the depth of the lesion, that the seventh nerve was paralyzed at a point above its division.

From the specific features of his case I deemed the iodide of potassium to be the best remedy, and he was therefore put upon gr. v, thrice daily. Hypodermic injections of strychnia and morphia ($\frac{1}{64}$ of a grain of the former to $\frac{1}{32}$ of the latter) did much good in relieving the severe cephalalgia. Localized galvanization was resorted to, and both the primary and secondary currents used. After the nerve and its branches had been pencilled over with stick-caustic, one electrode was applied to the ramifications of the nerve, while the other was placed over the mastoid process. So successful was this treatment that, after a daily *séance* lasting twenty minutes, in three weeks the patient's face was much more symmetrical, and the act of mastication was improved.

The pains likewise disappeared under the same current. Occasional directions of this and the Faradaic current over the eyelid did much toward the improvement of sight.

It now occurred to me that Matteucci's experiment upon the sac might be followed by gratifying results; so its cavity was filled with water, and one of the battery-wires finely covered with sponge was gently introduced into the external mea-

tus. After four weeks his hearing was so markedly improved that he easily distinguished loud voices, when the sound ear was closed.

November 12*th* (seven weeks after commencement of treatment).—During the application of the current the face resumed its expression, and he was able to close his eye completely. He is greatly improved. Injections discontinued. He has almost complete control over the levator palpebræ—this is more marked in the morning—articulation good.

November 28*th*.—Has now taken the battery for nearly ten weeks, and is about to discontinue treatment. The face is perfectly symmetrical, and the hearing nearly as perfect as ever—the only remaining disfigurement is a slight drooping of the eyelid on the affected side. Appetite good, and, though emaciated at first, he has now completely regained his former good condition.

Proceedings of Societies.

NEW YORK ACADEMY OF MEDICINE.

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In the discussion of Dr. J. C. Dalton's paper on "Sugar-formation in the Liver," the following remarks, on the uses and derangements of the glycogenic function of the liver, were made by Gouverneur M. Smith, M. D., Physician to the New York Hospital:

I have listened with great interest, Mr. President, to the elaborate paper on "Sugar-formation in the Liver," which has been presented to the Academy this evening by Dr. Dalton. Being engaged more especially in the study of the practical branches of medicine, I scarcely feel like acceding to the invitation to take part in the discussion of a question so purely physiological as the one which has just been presented.

As, however, it has so happened that my attention has been somewhat directed to the subject of glycogenesis and production of the various proximate principles in the vegetable kingdom, I laid some inferences upon these points before

this Academy in a paper on Vegetable Assimilation about two and a half years ago; and as I have recently called your attention to the generation of sugar in the animal economy during lactation, and in persons suffering with diabetes, I will perhaps venture to add a few words on this occasion, in the hope of turning the debate in a practical direction, but without diverging from the subject legitimately under consideration.

It seems to be proved by the experiments of Bernard, Flint, Lusk, and Dalton, that the liver possesses the property of generating saccharine material. This animal sugar can be traced from its source to the right side of the heart, and to the lungs, but in these emunctories it for the most part disappears; in the blood of the general circulation it can scarcely be detected.

A question which is at the same time physiological and relevant to the one under discussion is, the use of this sugar which is found in such a comparatively small portion of the vascular system. This point has not been alluded to this evening, nor do I know whether or not physiologists have come to any definite conclusions concerning it. Until we are furnished with more light on this subject, we are incompetent to elucidate various morbid conditions which it appears to me possibly have more or less dependence upon varying supplies of hepatic sugar.

Is the sugar a mere product of disassimilation, as some have argued, in this respect like urea, but unlike it in the fact that sugar is not an excretory material, and can be usefully appropriated in the economy? Sugar is certainly very different in character from the ordinary products of disassimilation such as we generally regard them, as for example creatine, creatinine, etc. Sugar is taken as food *per se*, as are also other principles readily convertible into it. Beneficial results doubtless follow such ingestion, for there seems an instinctive craving for the materials of the kind just mentioned.

In vegetables we observe various metamorphoses of organic matter, it being the final resultants which are utilized in assimilation. In the animal kingdom the sugar may in part be directly appropriated. Another part may be regarded as a principle which is an intermediate one, in some similar

chemical series of transformations as occurs in plants, the ultimate products playing important and conclusive *rôles* in the economy. Sugar, being a familiar substance, and comparatively easily detected, has been isolated and made an object of special interest as formed by the liver. It seems to be most probable that sugar is a product rather of the chemical metamorphoses of materials preparatory to assimilation, than a result of organic detrition.

Now, in whatever light we regard hepatic sugar, whether as a result of disassimilation, which is a view, as has been stated, that some have advocated, or as a distinctive product so to speak, we have yet to trace its special influence upon the animal economy.

Nor is this amount of animal sugar so insignificant as to be unworthy of notice. It is constantly being generated irrespective of the chemical nature of the aliment, though its formation seems more liberal if the pabulum has been amylaceous and saccharine in character. According to the careful experiments of Dr. W. T. Lusk, the blood of the right side of the heart in carnivorous animals contains from a quarter to half a grain of glucose per fluidounce under normal circumstances. Though such a large proportion of sugar does not recur in the blood of the general circulation, nevertheless, as the supply of hepatic sugar is so constant, we can infer that the amount formed during the course of twenty-four hours amounts to no inconsiderable quantity. Fibrin, according to Lehmann, is present in the blood in the proportion of only 4.05 in 1,000, but this modicum suffices to subserve most important uses in the animal economy. A small percentage may consequently, under certain conditions, yield an unexpectedly large aggregate. The amount of urea detected on analyzing the blood seems almost infinitesimal, but, when this principle is gathered by emunctories and excreted, its measure is by no means inconsiderable, varying, according to Parkes, from 286 to 688 grains *per diem.*

As, therefore, sugar is so constantly formed in the liver and in appreciable amounts, it must have a purpose in the economy of sufficient moment to deserve our special investigation; but the thoughts now hurriedly offered on the subject must merely serve as texts for a more extended and future consideration.

Derangements of the glycogenic function of the liver have been almost entirely overlooked as causes of disease, with the exception of the attention directed to the subject in reference to diabetes. In the various forms of functional and organic disorders of the liver, morbid conditions have been attributed to abnormal qualities of the biliary secretion, while they may have been, at least in part, due to a defective supply of saccharine material. If the liver during health is constantly generating sugar, such production is for some beneficent purpose. This function is as liable to interruption as are the other vital operations, and interruptions of physiological processes induce morbid sequelæ.

A *diminished* formation of sugar in the animal economy must be characterized by as remarkable abnormal phenomena as those which mark a too bountiful generation of saccharine material. In diabetes we preclude at times the use of sugar and of proximate principles liable to conversion into that body, for the reason that the system seems already surcharged with it. There is doubtless an opposite condition to this, in which the animal organism suffers from an insufficient supply of sugar, and such condition, as far as I am aware, has not attracted any very special notice. Patients suffering under a natural deprivation, of the kind indicated, can to a certain extent be relieved by artificial means in the same manner as we can supply deficiencies of iron, of phosphorus, etc.

It is reasonable to suppose that hepatic glycogenesis may under peculiar circumstances be either arrested or so modified that the supply of sugar in the body may be greater or less than in health. The symptoms indicating such conditions must vary in degree according to the intensity either of the interruption or augmentation of the function.

Now, in order that we can more thoroughly appreciate the pathological states just alluded to, we must better comprehend the physiological uses of the glycogenic function of the liver.

It may not be inappropriate, in this connection, to review for a moment the uses ot sugar in the vegetable kingdom. It is not proposed at this time to speak of the method of generating sugar, and other proximate principles in full growing plants, for this topic I have presented on a former occasion,

and illustrated with chemical diagrams. The subject can be most readily studied in examining the growth of embryotic plants.

The seeds of plants ordinarily contain a large amount of starch, which material is chiefly stored either in the cotyledons or in the surrounding tissues. In some seeds the fixed oils are found abundantly as a substitute for starch, and subserve a similar purpose, but on this point it is unnecessary to enlarge. When these seeds containing starch are placed under circumstances favoring germination, the starch is converted into dextrine, and thence into sugar. The latter being soluble is easily absorbed by the cotyledons, radicles, and plumules of the embryo.

The sugar thus appropriated is disposed of by the plantlet in two ways. One part is converted into acetic acid, which in turn is transformed by oxidation into carbonic acid and water. An *evolution* of *heat* attends these processes of vital chemistry, and the young plant is thus early enabled to maintain a suitable degree of temperature. Another part of the sugar is converted into permanent tissue, either into cellulose $C_{24}O_{20}H_{20}$, which is isomeric with sugar, or into some other structure composed of the ultimate inorganic elements just enumerated.

This brief exposition must suffice to show the chief uses of sugar in the vegetable economy, and, if the botanists have been correct in their interpretation of the phenomena characterizing assimilation and the production of heat in plants, we are perhaps partially furnished with a guide to the study of the uses of sugar in the animal kingdom. It is scarcely necessary to add that, while it is possible to follow certain parallels of similarity between the organic kingdoms of Nature, we should bear in mind that in some essential functions they are as diverse as they are congeneric in others.

A few words now in regard to the physiological uses of the glycogenic function of the liver, in the hope of throwing light upon some pathological and other conditions which may be attributable to variations in the function.

In the paper on diabetes which I read before this Academy in February last,[1] a divergence was made from the subject for

[1] New York Medical Journal, vol. xiii., p. 550.

a few moments in order to suggest a new office for the liver during lactation. A brief repetition of the view then expressed may not be inappropriate to this occasion, as illustrating one phase of the topic now under consideration.

After citing some instances of the increased production of hepatic sugar induced by certain reflex influences, the following theory was advanced: It is well known that sugar recurs in milk in the largest proportion of any of the organic proximate principles. It was suggested that this sugar was not formed *de novo* by the breasts, as has been contended by physiologists, but was elaborated by the liver, and simply separated from the blood, and appropriated by the *mammæ* as lactose, possibly after having undergone a slight transition. The glucæmia under such circumstances, however, must be greater than ordinarily occurs. Such increased glucæmia was thus accounted for: The *mammary irritation* accompanying the latter part of utero-gestation, and recurring during lactation (and even uterine irritation occasionally), could initiate a peculiar impression which was conveyed to the brain, and thence reflected to the liver, inducing an augmented generation of sugar. In other words, there was a nervous connection which was at least sympathetic. In proof that uterine irritation could occasionally induce such condition I have cited two cases, both patients dying from diabetes, but their details cannot now be repeated. Mammary irritation during lactation doubtless constantly and normally excites augmented hepatic glycogenesis, and this increased influx of sugar into the circulation, which under morbid circumstances would be chiefly eliminated from the blood by the kidneys, as in melituria, is in this instance mainly appropriated by the breasts, and made subservient to the nourishment of the nursing child.

Simon, several years ago, noted that milk was richer in sugar early during lactation than at later periods. This phenomenon can now, perhaps, thus be explained: The breasts when about to assume activity, and during the first few months of lactation, are in a condition better calculated to excite the peculiar erethism referred to, than at a later time when the secretion is fully established, and when the breasts partake more of the character of those glands the functions of which are permanent.

Without here repeating other details, in order to test the truth of my assumption, an analysis by an expert was made for me of the blood and of the urine of a healthy nursing-woman; the former was found to contain sugar, the latter none of this ingredient. While the theory appeared to me to be both plausible and probably true, this single analysis, though corroborative (others would have been made but for the difficulty of procuring suitable specimens), was not sufficient to assure me that the theory was founded on fact, though other circumstances which were given seemed additionally conclusive. A few days after reading my paper, I met with a statement which I here subsequently offered, which appeared to substantiate the view before expressed. M. Blot had frequently noted a concurrence of a transient glycosuria, during utero-gestation and lactation, but, so far as I am aware, had not accounted for any such coincidence further than there appeared to be a connection between the phenomena. If M. Blot has been accurate in his observations, not only is an additional fact added to strengthen my theory, but also an easy explanation of the relationship between the melituria and lactation which he has noted. Nature provides such a liberal amount of hepatic sugar during lactation, that more is generated than is required by the breasts for its lactose, and a part is consequently eliminated by the kidneys, as in morbid conditions.

While it is unsafe to accept as a scientific fact any theory which is not sustained by incontestable proofs, nevertheless, with the information at present in our possession, we are justified in offering the above as one of the probable uses of the glycogenic function of the liver. It remains to consider the use of the function as it is being ordinarily and constantly executed.

Sugar, as has been stated, can be readily traced from the liver to the right side of the heart, and to the lungs; in the blood of the general circulation its amount, as physiologists assure us, is quite inconsiderable. Is this sugar chiefly destroyed in the lungs and eliminated as carbonic acid and water, an *evolution* of *heat* attending the metamorphose? Such disposition of it in the animal economy would in its

chemical aspects correspond with that recognized as occurring in the vegetable kingdom, though the process is not identical. In fully-developed plants the carbonic acid, whether derived from the air, soil, transformation of sugar, or otherwise, is for the most part retained and decomposed, to procure carbon and liberate oxygen, but the plantlet growing from the seed destroys the sugar, and evolves a small amount of carbonic acid.

If sugar is disposed of in the lungs after the manner indicated, we have a partial explanation of the method of maintaining animal heat. The temperature of the centric parts of the body is somewhat higher than that of the peripheric portions, and such phenomenon is perhaps to be thus accounted for. This difference, however, is not very material, and the extremities for obvious reasons are more liable to be cooled than the trunk.

It has occurred to me that there is another and important way in which the hepatic sugar may be made use of in the economy. Is not a part only disposed of in the manner indicated, and while a small portion is retained in the circulation to be used as will be hereafter shown, is not another and considerable portion converted while in the lungs into some other principle, some *tertium quid*, which the physiologists have not recognized? This unknown substance may pass on into the blood of the general circulation, and in its various coursings be either broken up and cooled through the skin as carbonic acid and water, with the evolution of heat, and thus aid in maintaining the heat throughout the body, while another portion may be converted into tissues composed of its elements, carbon, hydrogen, and oxygen.

Dextrine in plantlets is the intermediate material between starch out of which it is formed, and the sugar which is recognized as being finally destroyed, and disposed of as above described. Sugar in the animal economy may be regarded in a somewhat analogous view, a part of it being intermediate between the material out of which it is formed in the liver, and some unknown substance into which it is converted in the lungs, to be finally disposed of in the blood of the general circulation.

It appears to me, Mr. President, that the conclusions herewith given, respecting the several uses of the glycogenic func-

tion of the liver, are legitimately drawn from the scientific premises which at present are in our possession. I have purposely omitted here all allusion to the formation of sugar in the economy otherwise than in the liver.

A final question of interest in this connection remains to be studied, namely, what morbid phenomena characterize derangements of the function we have been considering? To the production of sugar in the economy as occurring in diabetes I shall not allude, for this topic has recently occupied the attention of the Academy at two of its sessions. The phenomena accompanying melituria are so remarkable, that they can readily be recognized. There are doubtless various other abnormal conditions depending upon deviations from the normal formation of sugar.

In various functional and organic diseases of the liver, if the biliary secretion is impaired, it is reasonable to suppose that there may be also a concomitant derangement of the glycogenic function. The biliary and glycogenic functions may both be disturbed in the same individual, or again it may happen that one function may be disordered while the other is not interfered with.

Assuming the uses of sugar in the animal economy to be such as have been given, it may be legitimately inferred that, if hepatic glycogenesis is diminished or arrested, patients suffering under such condition should have a temperature below the normal standard, and should emaciate from the want of a ternary principle to convert into tissues of similar chemical composition.

These symptoms would be most apparent and be of primary occurrence, unless an artificial and chemically-adjusted diet prevented their appearance; other phenomena may occur of secondary incidence, being *sequelæ* of a prolonged deprivation.

Now, in persons suffering from various chronic affections of the liver, and even of other viscera, the liver being secondarily involved, we find both the conditions before enumerated. Even in confirmed diabetes, where there is a surplus of sugar, the same occur, for the sugar is chiefly excreted through the kidneys, the deranged system not appropriating enough to

maintain a uniform and normal temperature and to prevent emaciation.

There are many individuals who are not bed-ridden invalids, but who are hypochondriacal and dyspeptic; in such, the continual sensations of chilliness, and the loss of flesh, etc., may be partially attributable to a failure in the liver to produce a sufficient quantity of sugar. In various disorders in which there may be a sympathetic or secondary disturbance of the liver, we may trace similar symptoms to the same cause. And, again, an ordinary lean physique may sometimes indicate a diminished glycogenic function, and not simply a defective power of assimilation. It may happen also that a slender person suffers intensely during warm weather, and has an unusual tolerance of cold; in such a case an error of assimilation prevents a due appropriation of saccharine material as fat, and the greater part of the sugar is destroyed with the evolution of heat.

I have been led to suppose that there may be an *increased hepatic glycogensis* without a necessary concurrence of diabetes. Can we not thus at times account for *obesity?* Sugar may be morbidly generated and be largely assimilated as fat, and consequently not be excreted by the kidneys. Such view seems to be plausible and probably true. We occasionally observe a transient melituria in corpulent persons—the sugar is formed more generously than can at times be assimilated. These cases of ephemeral diabetes either correct themselves, so to speak, or can readily be relieved by dietetic means. It sometimes happens, however, that the assimilative powers no longer can appropriate the excessive saccharine matter, and the individual emaciates and falls into confirmed polyuria. I have met with such latter instance in a person of full habit. Dr. William Roberts, in his treatise on Urinary Diseases, speaks of having treated several cases of diabetes in which the subjects were corpulent persons. Of the causes of these variations in the formation of liver-sugar, time forbids me to speak at length.

On a former occasion it was my aim to show the relationships which existed between certain nervous conditions and increased hepatic glycogenesis. There may be opposite con-

ditions, in which the nervous system is so prostrated that it is unable either temporarily or permanently to stimulate even the normal amount of glycogenesis. But on this point I cannot at present enlarge.

Thus far allusion has only been made to the effects of differences in the *quantity* of sugar generated by the liver. There may be variations in the *quality* of the glycogenic function which occasion unfavorable *sequelæ*. Either an abnormal form of sugar is elaborated, or, what is more probable, some material which is not sugar, and which, though allied to it, is a diseased product, and fails to supply the economy with a material susceptible of being utilized in a healthful manner. The function is not arrested, but simply perverted.

There may be another mode, not before alluded to, in which either a saccharine or an allied material may indirectly prove a source of disease. It is well known that sugar, when artificially acted upon by ferments, undergoes a peculiar metamorphosis. It is possible that sugar or some congeneric but abnormal product as formed by the liver and carried into the blood, when the system is laboring under various morbid conditions, may be metamorphosed into principles which, if not positively inimical, are at least unsuited to supply the requirements of certain vital processes.

The subject we have been considering this evening has numerous direct and indirect bearings. Time forbids me, however, to refer to others, though some of them are perhaps as important as any of those to which attention has already been called.

I have ventured, Mr. President, to offer these few thoughts which have occurred to me, in considering the subject of sugar formation in the liver. It has seemed appropriate to bring forward this evening several relevant topics, both physiological and pathological in their nature, concerning some of which, perhaps, no very decided opinions have been formed. The thoughts herewith offered have been hurriedly gathered, and must be considered as being merely introductory to a more mature consideration. The uses and derangements of the glycogenic function of the liver have received comparatively little special attention. It remains for us to give to these sub-

jects further study, and, in the spirit of philosophical inquiry, endeavor to remove any misconceptions concerning them which we may have entertained, and to enlarge our views respecting an interesting group of normal and abnormal phenomena.

Bibliographical and Literary Notes.

ART. I.—*A Treatise on Diseases of the Nervous System.* By WILLIAM A. HAMMOND, M. D., Professor of Diseases of the Nervous System, and of Clinical Medicine, in the Bellevue Hospital Medical College; Physician-in-Chief to the New York State Hospital for Diseases of the Nervous System, etc., etc. With Forty-five Illustrations. New York: D. Appleton & Co., 1871. 8vo, pp. 750.

HEADLAND, in his admirable essay on the action of medicine, founds his views primarily on certain propositions capable of distinct proof, superadding to these, hypotheses statedly not determined, but probable, and indulging, moreover, in other less certain speculations and theories, seeming to lead in the direction of truth.

Dr. Hammond, in the book before us, makes no such classification of his statements. He says in the preface: "The reader will readily perceive that I have views of my own on every disease considered, and that I have not hesitated to express them." The views and observations of other writers upon nervous disease are so frequently quoted as to show the most intimate and comprehensive knowledge of the literature of the subject, and are often freely commented on, but the author's own statements are made with a positiveness which, especially when the observations upon which they are based are embraced within a period of five years, is more convincing to the student and young practitioner, than to those who have lived to see the most brilliant and widely-accepted theories exploded and forgotten, the most potent remedies and surest methods of "cure" fall into disease, their names only remaining upon the catalogue of our armamentary, an ever-accumulating testimony of human credulity and enthusiasm.

The method of instruction here adopted directly supplies the demand of the present time, in this country, for the easy acquisition of the means of rapidly attaining pecuniary success by the practice of a specialty. It may well be hoped, however, that the higher civilization of the future will induce a higher standard of knowledge, more philosophic aims, more diligent and reverent searching after truth for its own sake, than our schools now exhibit.

The arrangement of the work and division of the subject on anatomical principles certainly conduce to clearness, and may well serve the student as a means of systematizing his ideas, though it may be questioned if the method has not been carried further, in some instances, than the present state of our knowledge justifies.

The introduction relating to instruments and apparatus, the remainder of the work consists of five sections, respectively treating of diseases of the brain, of the spinal cord, cerebro-spinal diseases, those of nerve-cells, and of the peripheral nerves. Diseases of the sympathetic system, cerebro-spinal meningitis, chronic alcoholism, and Graves's disease, are excluded from consideration as being either little understood, or not sufficiently confined in seat and origin to the nervous system. Diseases are designated as far as possible by the *lesion* and not by the *symptoms;* thus we search in vain in the index for apoplexy, hemiplegia, paraplegia, hypertrophy and atrophy of the brain, hydrocephalus, etc. Information on these subjects is to be derived from the chapters on cerebral congestion, meningeal hæmorrhage, partial cerebral anæmia from obliteration of cerebral arteries, cerebral softening, cerebral sclerosis, spinal hæmorrhage, softening, etc. Of course this principle of nomenclature by lesions cannot be carried out in every case. Thus we have a separate chapter on aphasia, the names tetanus, hydrophobia, and hysteria are retained, and the author describes for the first time an affection "mainly characterized by an inability to retain the fingers and toes in any position in which they may be placed, and by their continual motion," under the name of "athetosis," which is certainly a more convenient handle to a group of

symptoms than "atrophy and disappearance of motor and trophic nerve-cells."

Those of the profession who, belonging rather to the conservative class, believe that the differential diagnosis of many diseased conditions of the cerebro-spinal tract is wellnigh impossible during life, and that several such conditions frequently coexist in the same individual, will not only be roused to wonder at the absoluteness with which the rules for distinguishing various affections are laid down, but may find the book less convenient for reference than if the classification were based more directly on clinical history.

Next to the diagnostic infallibility, if we may so express it, which pervades the work, we are struck with the strong reliance placed upon electricity and medicinal agents to effect cure. The use of the galvanic current is advised in seven out of nine of all the affections treated; the use of the bromides in fully one-half; the oxide of zinc, strychnia, phosphorus, the chloride of barium, and ergot, quite frequently, and far more positive results are predicted than are looked for by the majority of the profession in the treatment of diseases of the nervous system. Hyperæmia and anæmia of the nervous centres are ever prominent in the author's mind as elements of disease, and he gives evidence of his belief in the practicability of controlling these elements in nearly every chapter. The constant galvanic current, "when used so as to stimulate the sympathetic nerve" (by placing the two poles on the surface of the neck), he states, has the power of contracting the cerebral blood-vessels, and "a similar effect is caused by passing the current directly through the brain, the poles being applied to the mastoid processes." It is claimed that observation with the ophthalmoscope shows contraction of the retinal vessels while the current is acting, "and hence there can be no doubt that the result is produced upon those of the brain." We believe that the authorities in this community most reliable on the subjects of ophthalmoscopic investigation and intra-ocular circulation do not confirm these statements; at any rate, we may well hesitate to accept the conclusion drawn. But the author is equally confident of being able to reduce the amount of blood in the brain by the use of bromide of

potassium in the dose of twenty to forty grains three times daily. The phraseology of the directions given leads us to suppose that the dose intended to be prescribed is from fifteen to thirty grains; but as the teaspoonful is used as the standard of measure, of which a fluidounce contains only six, the doses would actually be as above stated. The desired results indicated by drowsiness, etc., would be expected in what is described as active cerebral congestion, in about ten days. No explanation is offered why the result does not take place earlier, if the presence of the bromide in the system causes the contraction of the vessels and cessation of the symptoms, and nothing is said of the probable duration of and reaction from uncomplicated cephalic hyperæmia, in about ten days or less, if it were let entirely alone, or if an efficient purgative were administered. The bromides are reënforced in the author's practice by the oxide of zinc, in doses of two grains, three times daily, but, as the subsidence of symptoms does not appear to be hastened, the reason for its administration is not obvious. Iron, quinine, strychnia, and phosphoric acid, are advised to be used together, to overcome "a little debility and mental depression" succeeding the congestion. We think many would prefer to "let well enough alone," after such an attack.

In cerebral anæmia, alcoholic stimulation is the author's main reliance, next to nutritious diet, and with the use of the combination of tonics above spoken of; and the use of bromides when this condition is diagnosticated is discouraged in the strongest terms. We do not think the experience of the profession generally coincides with that of our author as regards the physiological activity of the bromides, in the usual doses, but any *prohibition* of medication would seem to merit attention.

The direct galvanic current is stated to be equally efficient in regulating the diameter of the blood-vessels, and consequently the amount of blood, in the spinal cord, as in the cerebral mass, the poles being applied, as usual, to the skin over the part. Of medicinal agents, ergot, in drachm-doses, three times daily, is relied on to produce contraction of the vessels of the cord; and the indication of increase of the

amount of blood in the organ, and improvement of its nutrition, "is easily fulfilled by strychnia, phosphorus, phosphoric acid, and opium."

The chloride of barium is stated to have produced marked improvement in the symptoms in sclerosis of the brain and spinal cord, but no theory of its mode of action is advanced. Nitrate of silver still retains a place in the author's estimation, though not often mentioned, and not at all in connection with epilepsy. When we remember the reliance placed upon it, and other by-gones, by the profession, in the treatment of that disease, not many years ago, we may be pardoned for doubting whether the remedies now so highly recommended are not destined to fall into disuse in their turn. The fluctuations in the condition of unmedicated epileptics are so various that statistics require to be based on very long and discriminating observation, to be valuable.

As our author unhesitatingly reduces the essential pathology of epilepsy to either congestion or anæmia, we are not surprised to find him relying upon the bromides, the oxide of zinc, and, of course, the primary galvanic current, or upon strychnia, for great improvement or cure in a large proportion of cases. We are surprised, however, to find no mention of limitation of the quantity of food as a therapeutic measure; the importance of which, in most cases of epilepsy capable of improvement, cannot well be over-estimated.

On the whole, the tendency of the therapeutics of the book is in the right direction, most of the remedies, in the doses used, not being likely to do harm—at any rate, unless it be where mercurialization is advised in inflammatory disease; and the supporting line of treatment, as by iron, quinine, cod-liver oil, and stimulants, being adopted in conditions of debility. Anodynes are used sparingly unless where no hope of recovery exists. The treatment of syphilitic lesions by mercury and iodide of potassium is advised. The abstraction of blood, application of cold and heat, derivation, and counter-irritation, are used discriminatingly.

The chapter on insanity occupies less than sixty pages. It is obviously impossible to treat a subject of such magnitude and importance as this, satisfactorily, within such space, but

this portion of the work will be especially likely to be looked at with curiosity and interest on account of the peculiar views which have been heretofore publicly promulgated by the author. And we think that, if evidence were wanting that his stand-point is theoretical rather than practical in regard to insanity, we should find it here. His classification is not one of types of disease, but is based upon his own conception of what he calls the four "sub-forces" which make up the "force" called the mind, namely, perception, the intellect, the emotions, and the will. We believe this view to be founded in confusion of ideas. It has been customary to speak of the intellect, emotions, etc., as *entities*, but only by a figure of speech. Introspection and observation tell us that they are *modes of action*, not forces, and we should keep the matter clearer if we spoke only of volition and intellection instead of *the* will, and *the* intellect. That these functions of the individual self are always, during life, associated with the chemical and vital action of nerve-cells, and that disease of the latter may cause irregularity and imperfection of the former, we are all ready to admit, and upon this ground we hold the moral and legal responsibility of the lunatic to be impaired or destroyed. (But neither this nor any thing in the chapter before us proves that cerebration constitutes the whole of the inner life. The voice of the vast majority of mankind contradicts it by reason of a *consciousness* higher than that of the body.) If our author had said that *mental action* was made up of perception, intellection, emotion, and volition, we could follow his thought, but even then we should claim that volition differs from the other processes in its unity of character, and yet, in never being carried on but in association with the others, perhaps constituting their direct combined result; while we conceive that perception, intellection, and emotion, besides being varied in character, go on even in spite of previous volition. From this we should deduce that volition would never be deranged but with or through disorder of one or more of the other functions; moreover, we should find that clinical observation would confirm our view.

The various forms of insanity are grouped together in classes for purposes of description and study. It is an arbi-

trary, not a natural grouping, and the same individual may manifest disease in very different ways at different times. As the study of this affection can only be pursued with advantage, primarily, at any rate, from the practical stand-point, by the observation of actual cases, a simple classification, according to the most prominent characteristics for the time being, is the most advantageous, and in Esquirol's five classes (as given in the book before us), melancholia, monomania, mania, dementia, and idiocy, we have a sufficiently elaborate scheme, for it will often be difficult to decide in which class to put a given case. General paralysis, epilepsy, etc., though usually accompanied by characteristic mental symptoms, are not invariably so, and it is more convenient to describe them as causes and complications of insanity than to make separate classes of them.

Dr. Hammond's seven classes are perceptional, intellectual, emotional, and volitional insanity, mania (the union of two or more of the preceding), general paralysis, and idiocy and dementia. It would be useful if lunatics could be induced to conform to it; but, except so far as it covers the same ground as Esquirol's, it conveys false impressions of insanity as we really find it. The existence of volitional insanity, that in which the will alone is affected, is denied by the highest authorities, its most characteristic feature as described being a failure to persist long enough to be investigated, and like another apocryphal form, mania transitoria, invariably presenting itself as the shield for criminal acts. Volition can neither take place alone, nor alone be disordered.

Notwithstanding the imperfect success of others, Dr. Hammond essays a *definition* of insanity; but, though he makes a step in the right direction, he still appears to us to fall short of the mark. The difficulty seems to have been that all the attempts have been not at what Whately calls an *essential* definition, but at an accidental definition or description, which is necessarily imperfect. A true definition separates a phrase from all others, and limits its signification.

Dr. Hammond says: "Insanity, strictly speaking, is only a symptom, and I would define it as a manifestation of disease of the brain, characterized by a general or partial derange-

ment of one or more faculties of the mind, and in which, while consciousness is not abolished, mental freedom is perverted, weakened, or destroyed." The words "characterized by" seem at first refer to "disease," but the context shows them to refer to "manifestation." We must therefore substitute *consisting in* for "characterized by." The succeeding clauses are either merely an extraneous deduction in regard to the *individual*, not belonging to the definition at all, or a gratuitous repetition of the idea included in "derangement of one or more faculties of the mind."

To be perfect, a definition must be simple. Insanity is, primarily, of course, *unhealthiness;* secondarily, *unhealthy mental action;* and by still further limitation, *unhealthy mental action dependent on disease of the brain.* We cannot go far beyond this. It covers the ground exactly, and no more. The term is also frequently and necessarily applied to *the disease* itself, as we have no other name for it.

The author is often happy in description, and quotes various interesting cases, some of which have done duty in the text-books far too long, especially when brought forward, as here, after the lapse of years, in support of the doctrine of momentary insanity. Of course the existence of such a form cannot be *disproved*, but the accounts upon which the doctrine rests are so meagre, ancient, and unsatisfactory, and it is so inconsistent with modern impartial observation of the disease, that we look forward to its ultimate universal recognition as a chimera.

The illustrations of this chapter are singularly infelicitous, considering that they were selected from a large number of photographs of patients in the New York Asylum. Acute mania in the person of a Celtic maiden wears an expression of imbecility; one illustration of mania with depression, of which the text says "apprehension and terror are plainly depicted on her countenance," stares with a placidity rivalling Mrs. Jarley's wax-works. The next is the picture of a microcephalic Celt, without expression, of unknown history, but intended to illustrate the same disease. Then comes a reproduction of the case of general paralysis from the frontispiece of Bucknill and Tuke, even worse than the original, soon followed

by a figure representing dementia, in which the fixed attitude, clasped hands, and closed eyes would seem to indicate a determined shutting out of the external world, rather than mental weakness.

The illustrations in other parts of the work are excellent.

The author's clear and terse style of diction renders the book exceedingly readable, and the cases reported and cited add much to the interest of the text. There is little in it beyond the comprehension of the average student of medicine; and the fourth volume of Dr. Austin Flint, Jr.'s, "Physiology of Man," soon to be published, will make it more useful to him, the two together being intended to form a complete work on the physiology and pathology of the nervous system.

The symptoms, causes, diagnosis, prognosis, morbid anatomy, pathology, and treatment of each affection, are distinguished by separate headings of broad-faced type, which is exceedingly convenient of reference, and adds to the appearance of the pages. The paper is of an agreeable tint, and the typography is very fine, and surprisingly free from error.

The morbid anatomy and pathology are of course brought fully up to the present state of knowledge, and there is much statistical information under these and other heads, gathered from every source, and here brought together for the first time, and wherever possible this is relied on as the basis of doctrine. The changes of structure are accurately described, as regards both gross and microscopic appearances, and the latest investigations of the minute anatomy of the nervous centres are not merely alluded to but freely quoted, and the author's own observations are frequently given, confirming and adding to what others have done in this field.

The portrayal of symptoms is often graphic and striking. The phenomena of disease are so described as to impress themselves forcibly on the mind of the student. There is so much that is entertaining in the mental and other manifestations of nervous disorder, especially when presented as they are here, that a work of this kind will find many readers outside the profession, and, it may be hoped, will serve not only to interest and amuse, but to induce a closer observance of those hygienic laws upon whose violation many of the ailments here treated

of depend. There is probably no community in the world more in need of caution and warning as to the abuse of the nervous system than our own. The majority of the busy crowd that fills the streets of this city are working at high pressure, and many only realize that human powers are indissolubly associated with physical structure when overtaken by actual disease.

Some of the latter portions of the volume are not elaborated with the care displayed in the earlier part, but system and order prevail throughout.

ART. II.—*Analysis of Four Hundred and Thirty-nine Recovered Amputations in the Continuity of the Lower Extremity.* By STEPHEN SMITH, M. D.

ART. III.—*Amputations at the Ankle-joint in Military Surgery.* Same Author.

THE above articles, published as a *brochure*, are excerpted from the Surgical Memoirs of the U. S. Sanitary Commission.

The profession is under an obligation to Prof. Smith for the laborious collection, comparison, and analysis of these cases. He has proceeded intelligently and conscientiously in his investigations, with the view of ascertaining, or rather contributing his observations toward the final ascertainment, as nearly as may be, of the points of practical value in regard to amputations.

These points are taken up in order, and involve primarily, amputation with the hope of saving life; secondarily, the precise locality, with the double object of additional safety to life, and subsequent utility of the abbreviated limb; and thirdly, the method of operation with reference to rapidity of recovery, symmetry, and final adaptation for the comfortable and useful employment of an artificial substitute.

We appreciate the difficulty of the task which Prof. Smith has imposed upon himself, and we recognize the great amount of labor, care, thought, and anxious attention, bestowed upon the details of the cases thus far submitted. The conditions of

wound and operation, and the contingencies, local, personal, medical, and military influence, results in such a manner that figures and numbers cannot be relied upon without certain reservations which every one consciously and unconsciously is continually making in his own mind.

The statistics which Dr. Smith has compiled go to sustain the general judgment of the profession as expressed by the highest surgical authorities, and confirm the received opinions of the best living military surgeons.

We do not propose to reproduce any of the figures or statistics, but confine ourselves to a brief *résumé* of the conclusions which they have led the learned author to announce, and with which in the main we fully agree.

Prof. Smith avoids the temptation of giving countenance to what we may call the ultra-conservative school.

We would ourselves go so far as to say, *When in doubt, amputate*, giving life, not limb, the benefit of the doubt. The occasional, exceptional, partial recoveries of apparently hopelessly-shattered limbs, with the almost invariable concomitants of ruined constitutions and entailment of fatal organic diseases, do not invalidate the principle. Such cases attract attention in hospitals, are exhibited with pride by the surgeons who have had them in charge, and often leave a very disturbing influence on the minds of young surgeons and spectators.

They speedily disappear from sight, and commonly die, as a consequence of the almost superhuman effort which Nature has made for their restoration. It would be very interesting if we could get all the results of recoveries after gunshot-fracture of the thigh without amputation, and of the reported cases of cure of wounds involving the hard tissues of the knee-joint. We think the record would not be in favor of hyper-conservatism.

Recoveries after amputations are far greater in number, and are made with infinitely less sacrifice of comfort, health, and future usefulness, than those which attend and follow the efforts to preserve grievously-injured limbs.

We believe that records of comparison could be obtained, and we hope an effort will be made in this direction.

The principle of the increase of safety to life, by the increased distance from the trunk at which an amputation is

performed, receives corroboration with the single exception that amputation of the leg in its upper third has nearly the same ratio of mortality as amputation of the same limb in its lower third.

It is a curious fact in our experience, that gunshot-injuries of the tibia are less likely at the same distance to superinduce consecutive inflammation and degeneration of the knee-joint than similar injuries affecting the femur. A blow or an abrasion from a bullet within three inches of the condyles is exceedingly liable to set up inflammation of the condyles with ultimate destruction of the joint if, after the condition is recognized, amputation be not early performed.

Dr. Smith's pamphlet and the reflections suggested by its study indicate how much remains to be done for the full elucidation of this most important branch of surgery.

We hope the author will follow out the subject, aided by all the light which will be thrown upon it by the publication of the surgical history of our late war, and the voluminous contributions which will soon begin to pour into the reservoirs of medical knowledge and experience as the fruits of the late tremendous wars in Europe. We venture the opinion that the diffusion of the knowledge of the consequence of wars personally to survivors, and the silent but eloquent admonitions of the Army Medical Museum, have predisposed the minds of public men and statesmen to peace, and have contributed to the settlement of causes of international dispute which we have lately witnessed in Washington. The country owes much to our profession.

Dr. Smith discusses the methods of amputation, but does not distinctly state a preference. Good and bad results are obtained by any and all the recognized methods. Our own preference, without dogmatism, is for oval skin-flaps drawn back and not dissected, and for conical division of muscle with bone as the apex, as far as is practicable. We think division of muscular tissue is best made with a small knife. We deprecate extensive dissections of flaps of skin, either oval or circular. We strongly advocate amputation in contiguity whenever practicable, and we would almost go the length of condemning all amputations between the ankle and the knee.

In our own case we would elect amputation at the knee in preference to any amputation of the leg in continuity. We are pleased to see Dr. Smith's defence and vindication of ankle-joint amputations. In young, well-nourished subjects with good teeth and a fully-developed osseous system, we should give the chance of the superior stump to be obtained by a successful Pirogoff.

In persons of an opposite physical character, and those advanced in age beyond forty-five or fifty, we should prefer a Syme.

It is to be regretted that the average professional mind in this country at the beginning of the war was not educated to appreciate the advantages of amputations in continuity. Many cases were amputated in the lower third of the thigh which were adapted for disarticulation of the knee, and many condyles of the femur were unnecessarily and mischievously sawn off.

We have seen no mention anywhere made of the proposition to cover the sawn end of bone with flaps of periosteum. It was proposed during the war by Dr. Redfern Davies. One difficulty besides its novelty arose in its execution, in the want of an instrument well adapted for peeling up the periosteum. Sayre's periosteal knife would answer the purpose. The appreciation of the value of stumps with reference to the use of artificial limbs by the accurate measurements and practical observations of Dr. Hudson, adds greatly to the value of Dr. Smith's conclusions. After life has been secured, the crucial test lies here, and by this standard method and treatment are to be tried.

We have not space to follow out these most interesting inquiries, but we hope to return to them in a more extended review of the "Surgical Memoirs."

The Minutes of the Proceedings of the American Medical Association, in advance of the regular volume, are announced by W. B. Atkinson, M. D., permanent secretary of the Association, price twenty-five cents per copy. This arrangement

supposes a degree of impatience on the part of the profession quite disproportionate to the actual importance of the last Proceedings. It would be a wiser plan to hasten the issue of the annual volume of Transactions.

Henry C. Lea, Philadelphia, announces the following books: Hamilton on Fractures and Dislocations, fourth edition; Chambers on Restorative Medicine; West on Nervous Disorders in Childhood; Nothnagel's Hand-book of Materia Medica, from the German; Von Graefe's Clinical Lectures on Ophthalmic Medicine and Surgery; and Taylor on Poisons, third American edition.

We have received the first number of *New Remedies*, a quarterly retrospect of therapeutics, pharmacy, and allied subjects. It is ably edited by Horatio C. Wood, Jr., M. D., of Philadelphia, and promises to be of much value to the profession. It is a handsome octavo journal of eighty-four pages, and is published by William Wood & Co., of this city. Terms, $2 per annum.

Prof. Joseph Jones, of New Orleans, is engaged in the preparation of a treatise on the Diseases of the Southern States, including the Medical and Surgical Memoirs of the Confederate Army. It is estimated that the whole will make two volumes of one thousand pages each, which will be furnished to subscribers at actual cost.

Messrs. J. B. Lippincott & Co., Philadelphia, announce Reynolds's System of Medicine, vol. iii.; Manual of Diseases of the Ear, by L. Turnbull, M. D.; Beck's Medical Jurisprudence, new and revised edition, with additions; and Wear and Tear, or Hints for the Overworked, by S. Weir Mitchell, M. D.

The Journal of Cutaneous Medicine, lately published in Belfast, has been discontinued, and in its place the *Doctor* will publish quarterly reports on dermatology by Dr. H. S. Purdon. Subscribers to the first-named journal will receive the *Doctor* until the expiration of their subscriptions.

M. Gustave Bossange, of Paris, announces that his place of business escaped destruction, and that he is prepared to fill

orders for anatomical and pathological works and models. Copies of his extensive catalogue will be sent on application. His address is 16 Rue du 4 Septembre.

"The Medical World" is the title of a small monthly journal, which made its appearance July 1st. It is edited by R. A. Vance, M. D., and published by William Baldwin & Co., New York.

Books and Pamphlets Received.—The Modern Operation for Cataract. A Lecture delivered at the Harvard Medical School, April 5, 1871. With an Aanalysis of Sixty-one Operations. By Hasket Derby, M. D., University Lecturer on Ophthalmology, etc. Boston, 1871.

Opium and the Opium Appetite; with Notices of Alcoholic Beverages, Cannabis Indica, Tobacco, and Cocoa, and Tea and Coffee, in their Hygienic Aspects and Pathologic Relations. By Alonzo Calkins, M. D. Philadelphia: J. B. Lippincott & Co., 1871. 12mo, pp. 390.

On Amputation of Redundant Scrotum in the Treatment of Varicocele. Illustrated with a New Instrument. By M. H. Henry, M. D. Reprint from the American Journal of Syphilography and Dermatology, July, 1871. New York: F. W. Christern, 1871, pp. 10.

Insanity; its Dependence on Physical Disease. Read before the Medical Society of the State of New York, February, 1871. By John P. Gray, M. D., Superintendent of the New York State Lunatic Asylum.

Woman's Medical College of the New York Infirmary, 128 Second Avenue, Annual Catalogue and Announcement. New York: S. Angell, 1871.

Third Annual Report of the Secretary of State of the State of Michigan, relating to the Registry and Return of Births, Marriages, and Deaths, for the Year 1869. Lansing, Michigan, 1870, pp. 205.

Photographic Review of Medicine and Surgery. A bi-monthy illustration of interesting cases, accompanied by notes. June, 1871. Four Photographs. Philadelphia: J. B. Lippincott & Co.

Bulletin of the New York Academy of Medicine. Nos. 10 to 17. New York: William Wood & Co., 1871.

Twenty-eighth Annual Report of the Managers of the State Lunatic Asylum, for the year 1870. Albany, 1871.

Transactions of the Vermont Medical Society, for the Years 1869 and 1870. Burlington, 1870, pp. 233.

Proceedings of the Academy of Natural Sciences of Philadelphia. Part I. January, February, March, 1871. Philadelphia, 1871, pp. 88.

Miscellaneous and Scientific Notes.

Michigan Medical Society.—The annual meeting of the State Medical Society of Michigan was held at Kalamazoo, June 14th and 15th. After the address of the President, J. H. Bartholomew, Dr. Jerome reported from the Committee on the Care of the Insane. The committee condemned the system of each county caring for its own—the cottage plan of separating them into small buildings, and any plan of separating the insane into curable and incurable. The conclusion was, that the plan carried out at the Michigan State Asylum, at Kalamazoo, was the best that could be devised. The report was adopted without debate.

The Committee on Mineral Springs reported by sections. Dr. Hitchcook, for therapeutical results, furnished a comprehensive tabular statement of cases from each spring. The committee considered the cases too few, and not sufficiently under skilful control, to reason from with safety. There was some evidence that neuralgia and paralysis have been profitably treated.

Dr. Kedzie presented a very interesting and scientific analysis of their supposed magnetic properties, demonstrating beyond any question that the magnetism was simply the result of the vertical position of the iron tubing. It has nothing to do with the water, cannot be bottled up with it, and the water at the spring is not materially affected by it; in fact, the magnetic properties, or phenomena, are not of the slightest importance.

Dr. Duffield presented his report on the Geology and Natural History of Mineral Wells. He grouped them as follows:

Chalybeate, or ferruginous waters, class No. 1.—Owasso.

Sulphurous or hepatic waters, class No. 2.—Alpena, Wyandotte, and Sandwich, opposite Detroit.

Acidulous or carbonated, class No. 3.—None, in the strict sense of the word.

Acidulo-alkaline, class No. 4.—St. Louis, Michigan.

Saline waters, class No. 5.—Purging Salines, Midland City and Butterworth Well, Grand Rapids.

Salt-brine waters—Spring Lake and Lansing.

Dr. H. B. Baker reported from the Committee on collecting Vital Statistics, and offered the following resolutions, which were adopted:

Resolved, That it is the duty of the members of the profession to use all honest efforts in their power toward enlightening the people on the subject of the principles of medicine, and the several sciences upon which it is based.

Resolved, That a knowledge of the fundamental principles of chemistry, anatomy, physiology, and hygiene, is of far greater value to the people than much of the knowledge generally sought to be imparted in our public schools; and that the teaching of these subjects therein, by means of lectures and otherwise, by competent members of the profession, ought to be and is reommended and encouraged by this Society.

Resolved, That, whereas it is believed that the members of the medical profession are in possession of useful knowledge on the subject of the preservation of life and the prevention of disease and death, that is not at present available to the people at large, for the reason that there is no communication on such subjects between the profession and the people; therefore it is the duty of the profession to do all in their power toward establishing some method by which such knowledge may be given to the people.

The next meeting of the Society will be held at Grand Rapids.

Medical Teaching in Berlin.—From a letter of the Berlin correspondent of the *British Medical Journal* we make the following extracts:

"Ward-work here is almost unknown, and its place is very insufficiently supplied by crowds of lectures on every possible subject. Prof. Frerichs lectures five times a week, from eleven to twelve, and gives an admirable *résumé* of the cases of one or two patients brought before him, but who are necessarily very indistinctly seen by the eighty or ninety students occupying the room. He makes no clinical visit of any kind; and, although the members of the practising class, as Dr. Swanzy tells us, are called down one by one, their presence is merely nominal, as they do little more than stand by while the professor conducts his examination of the case. True, they are expected to follow the further progress of the patient; but this, after all, is a poor substitute for real bedside teaching; and it jars seriously upon our feelings of humanity to see poor

creatures in a sick or even dying state exposed publicly in the lecture-theatre and treated with not much more ceremony than they will receive a few days later in the dead-house.

"I should strongly advise any one coming here to attend an excellent class by Dr. Quincke, *chef de clinique* to Frerichs, as a good opportunity is thus afforded him of seeing something of the cases in the wards.

"Prof. Traube lectures four times a week, from nine to eleven, and forms an exception to the general rule by devoting the other two days to a most careful clinical visit. Every student has the chance of seeing and hearing for himself, and no occasion is lost for displaying admirable microscopic demonstrations of sputa and urine. Out of the one hundred and fifty beds which compose his service, many interesting cases present themselves; and he has devoted, among other things, special consideration to pneumonia, phthisis, erysipelas, typhus, aphasia, delirium tremens, diabetes, and that connection between kidney- and heart-disease on which he has very ably written.

"In spite of Traube's more special care of their wants, the students flock in much larger numbers to Frerichs's teaching. The only other general medical *clinique* is that of Dr. Meyer, who has no beds, but holds forth on the selected cases from a dispensary in the Ziegel Strasse; and, this being the sum total, we are forced to decide that this branch of medical study has not met with its due development here. But every school has its specialty, and pathology certainly reigns supreme in Berlin.

"Nothing more complete and admirable can be imagined than the arrangements of Prof. Virchow in his pathological institute. This is a separate building, placed in the Charité Garden, and conducted by himself and three assistants, one of whom, Dr. Oscar Liebreich, of chloral celebrity, presides over the chemical laboratory. Every morning, from seven to nine, the professor lectures in two alternate classes, one consisting of pathological demonstrations, and in which large numbers of recent specimens are passed round and commented upon in the most lucid manner. The other is purely microscopic, each student making his own preparations, which are finally inspected and criticised by Virchow himself. Notwithstanding the early hour, these classes are very fully attended, and their

members are further permitted to pursue their studies privately, with full command of the vast supplies of material which the hospital affords; and when to this I add that the professor lectures from eleven to twelve on some special branch of general pathology, and that one of his assistants gives a course of normal histology, I have said enough to show how excellent are the opportunities for studying this all-important branch."

Hypodermic Use of Sublimate in Syphilis.—Dr. Hagens has published an important article on this subject in the *Ungar. Med. Presse*, No. 38. The author thinks that the injections have met with undeserved praise and blame. To settle the matter, he applied the method extensively, both in private and hospital practice, for about fifteen months. Full and very interesting details are given, the author finally laying down the following propositions: 1. The opponents of this method have unjustly taxed it with inefficiency and harmfulness. 2. These injections are superior to all other kinds of mercurial treatment, on account of their rapid results, the small and regulated doses required, the non-interference with the digestive organs, and the possibility of allowing the patient to go out (with some restrictions as to diet). Relapses after the hypodermic method are not more severe than with other modes of using mercury, nor are they so numerous. 3. This method is relatively powerless as regards some symptoms, especially affections of the mucous membrane of the oral and nasal cavities, and psoriasis palmaris. Nay, the injections may give rise to these scaly eruptions, when relapses take place, and a combination of this method with others is then advisable. 4. The hypodermic treatment should, therefore, not be regarded as the only mode of using mercury, and applicable in all cases, nor can the result be always fully guaranteed. But the method may be recommended for more extensive application than it has hitherto enjoyed, without excluding the other means of introducing mercury into the system.

Dilution of Vaccine Lymph.—Prussia is avowedly the country where regular revaccination is most generally practised,

the law making the precaution obligatory on every person, and the authorities conscientiously watching over its performance. As a natural result, cases of small-pox are very rare. It has, however, been objected, there as here, that lymph is scarce. To make the most of such lymph as there is, Government has tried its application mixed with glycerine, and the result has been so successful as to lead to a public recommendation of the mixture to official vaccinating surgeons. The *Pall Mall Gazette* quotes the manner in which the glycerine lymph is prepared from the *Reichsanzeiger:* The pustules of a healthy vaccinated person are opened with a needle, and the effluent matter carefully removed by means of a lancet, the same instrument being gently applied to assist the efflux. The lymph is then best placed in the hollow of a water-glass, and there mixed with twice its quantity of chemically pure glycerine, and as much distilled water. The liquids are thoroughly well mixed with a paint-brush. The mixture may be preserved for use in capillary-tubes, or small medicine-glasses. The lymph thus procured is considered equal in effect to pure lymph; care must, however, be taken to shake it before use.—*Medical Press and Circular.*

Standard Composition of Milk.—Dr. J. Emerson Reynolds lectured at the Royal Dublin Society on May 13th, on the "chemistry of milk." According to *Nature*, it was proved, by a large number of analyses of milk taken from cows fed in various ways in different parts of the country, that milk is naturally subject to very wide variations in the proportions of its constituents, and hence that it is extremely difficult, if not impossible, to state with precision that a given sample of milk has been adulterated with a certain amount of water. He suggested that milk should in future be judged according as it might reach or fall below a certain standard quality, fair alike to the vendor and the purchaser; and that milk falling below the standard should not necessarily be stigmatized as adulterated, but simply have a lower commercial value attached to it. The following is the standard proposed: Water, 87.0; butter, 3.5; casein, 4.0; sugar, 5.0; salts, .5. It has been hitherto impossible to speedily measure the proportion of the

valuable casein of milk without recourse to elaborate chemical analysis. By means of a very simple contrivance, which was exhibited at the lecture, the proportion of casein could be speedily ascertained. We may observe that, according to the Swedish experiments, detailed in the *Milk Journal* of May 1st, the solids of milk do not fall below 11½ per cent., under any changes of season, and in various breeds of cattle, provided that they are well fed.—*British Medical Journal.*

Mediastinal Tumors.—Dr. Franz Riegel contributes to *Virchow's Archives* a valuable paper on the diagnosis and pathology of mediastinal tumors. A summary of the paper is given in the *Dublin Quarterly Journal*, May, 1871. Of 42 cases collected by Riegel, 33 were cancerous or sarcomatous, 4 fibroid, and 5 dermoid cysts. Virchow believes that many of these tumors originate in a persistent thymus gland, while others arise from mediastinal or bronchial glands, or from areolar tissue in the outer coat of the great vessels. These tumors occur most frequently between twenty and thirty years of age, and oftener in the male than in the female. They may present no symptoms whatever for a long period, and then progress very rapidly to a fatal issue, but generally the symptoms are developed gradually. They may grow upward, forward, or inward. In the latter case, which is most common, the lungs and heart are compressed, and, when the tumor attains some size, a want of symmetry in the thoracic wall will be perceptible. Effusions commonly take place into the pleural cavity and pericardium. Pain is generally present, with dyspnœa and cough. If the patient is old, Prof. Skoda believes the tumor probably malignant. It is often difficult to distinguish this disease from aneurism. Pleuritic effusion resembles some mediastinal tumors, and the differential diagnosis is especially difficult when effusion in the pleura coexists with tumor.

The Gaillard-Yandell Feud.—In the June number of the *Richmond and Louisville Medical Journal* Dr. Gaillard devoted nineteen pages to a gross and defamatory attack on the personal and professional character of Dr. D. W. Yandell, the recently-elected President of the American Medical Associa-

tion. To this Dr. Yandell replied in the *American Practitioner*, courteously, though it seemed to us at unnecessary length. Dr. Yandell's professional character is too well known to the gentlemen who elected him President of their Association to be injured by the *ipse dixit* of even the editor of "the largest medical monthly in America," and the attack of Dr. Gaillard is an implied insult to the members of said Association. The profession at large has nothing whatever to do with the private differences of medical gentlemen, and we emphatically protest against the offensive and undignified conduct of Dr. Gaillard in this affair, which, apart from its medical aspects, affords the public a spectacle disgraceful and humiliating in the extreme.

Curious Property of Arteries.—In a paper addressed to the French Academy of Sciences, Dr. Bonnafont speaks of a singular and valuable property arterial vessels seem to possess of resisting the direct action of spherical bullets much better than the nerves do. One of his observations which led him to this conclusion was made at Koodiatasy, near Constantina, where a soldier was hit from behind in the armpit, by an Arab who was close upon him. The bullet, in its passage forward, cut the nervous plexus nearly through, and also the axillary vein. The integuments, and all the other fleshy substance in that region, were frightfully lacerated, and even blackened by the gunpowder, yet in the midst of all this ruin the artery alone lay uninjured in the cavity, like a solitary cord. Another case quoted by him was exactly similar. He explains the fact by the cellular and elastic structure of the arterial coats, and by their cylindrical form, rendered still stronger by the continual motion of the blood.—*Medical Times and Gazette.*

Objections to Rubber Feeding-Bottles.—Prof. Gunning, governmental analyst at Amsterdam, says of infants' feeding-bottles: "I object to them in all instances when any part of them is composed of caoutchouc or India-rubber, or any like material. There is nothing so ill-suited to the constitution of the human body as the material in question. When, in consequence of suction, the pores of the caoutchouc are enlarged,

some portion of milk always remains behind in them, which cannot, or, at least, cannot without great difficulty, be removed. This milk quickly becomes bad, and spoils the fresh milk with which it comes in contact. The caoutchouc material in question is made of several ingredients. White zinc, or white lead, is very commonly employed, which is very poisonous. My objections are not founded on *a priori* conclusions. In this country many fatal cases have happened among infants, which, on solid grounds, may be ascribed to the use of these bottles."

Prize Essay on Diseases of Children.—The President of the Medical Society of the County of New York, Dr. Abram Jacobi, has placed in the hands of the Treasurer four hundred dollars ($400), to be awarded for the best essay on "The History of the Diseases of Infancy and Childhood, in the United States, and of their Pathology and Therapeutics."

Competitors will send their essays (in English), with motto attached, and the name and address of the writer, with the same motto, in a sealed envelope, to the Secretary of the Society, Dr. Alfred E. M. Purdy, No. 123 East Thirty-eighth Street, New York City, on or before January 1, 1873.

The Committee are authorized by the Society to withhold the prize if the essays submitted should not merit it. The prize is open for universal competition.

Austin Flint, M. D.,
Ernst Krackowizer, M. D., } *Committee.*
Edward S. Dunster, M. D.,

Incremation on a Large Scale.—The commission appointed by the Belgian Government to disinfect the battle-fields around Sedan have resorted to incremation. According to the *British Medical Journal*, the burial-trenches having been carefully laid open, a considerable quantity of tar was pumped in; and, when this had infiltrated the mass, petroleum oil was poured in. This was set fire to, and light wood thrown on the flames to make the combustion more active. At the end of three hours nothing but a calcined mass of bones remained. During the morning, chlorine gas was set free in large quantities; and the workmen declare that there was not the faintest cadaveric

odor perceptible. Finally, the calcined *débris* were covered thickly with dry chloride of lime, and the trenches heaped with earth mixed with quicklime.

Accident Statistics.—Some curious statistics have been compiled by the *Engineer*, from which it appears that an Englishman's risk of dying by strangulation is six times as great as that of being killed on a railway, whether by his own carelessness or by an accident. If his own carelessness be excluded from the estimate, his risk of death by hanging is one hundred and thirty times as great. Ninety-nine times as many people die of cancer in England as are killed on railways. Excluding, as before, the element of carelessness, 2,165 persons will die of cancer to one killed on a railway. In England, during five years, 333 accidents occurred—200 from collision, 77 from getting off the line, 36 from damage to machinery, and 20 from other causes. For fourteen years, from 1855 to 1869, one person was killed to 7,161,301 transported.

Chloral in Tetanus.—M. Bensasson (*Presse Méd. Belge*) relates a case of traumatic tetanus occurring in a lad, thirteen years of age, to whom he was called the third day after the appearance of the symptoms. He found him in a state of almost complete opisthotonos, and determined to try the effects of chloral, and by about the thirty-fifth day the patient had completely recovered. The entire quantity of chloral administered amounted to 180 grammes, commencing with four grammes in the twenty-four hours, which almost immediately procured him the sleep he had been so long utterly deprived of. The dose was gradually increased to eight and ten grammes in the twenty-four hours.

A Professor on the Defensive.—Prof. Karsten, of Vienna, having rendered himself obnoxious to his students by the extraordinary severity of his examinations, has been threatened with personal violence, and has since applied to the authorities for permission to carry a sword-cane and a revolver for his own defence. He also demanded that two hundred policemen should be placed at his disposal to prevent a repetition of the disturbance of May 3d. The commissary of police declined to

grant either request, and advised the warlike professor to avoid the scene of danger.

Medical Disputes in Georgia.—In the *Savannah News* we find a report of a somewhat stormy meeting held in that city on the 7th ult. Nearly one hundred physicians, delegates from various parts of the State, met for the purpose of protesting against the extraordinary power possessed by the Atlanta Medical College, under act of Legislature passed in 1858. The last Legislature appears to have corrected the evil, but the point in question was the validity of degrees granted by the college during its possession of what is regarded a dangerous power. The convention claimed to be acting solely with a view to protecting the honor of the profession in Georgia.

Chemistry in China.—We have received from Dr. J. C. Kerr, of Canton, China, a copy in the Chinese language of a translation of Wells's Principles of Chemistry. The work was undertaken by Dr. Kerr for the benefit of native students attending the hospital of the Medical Missionary Society, under his care. This society furnished the funds necessary for the publication of the work, which will doubtless be of great value to Chinese students and scholars. The orange-colored title-page gives the book a very attractive appearance, but we refrain from criticism of its contents.

New Preparations.—Messrs. John Wyeth & Brother, of Philadelphia, have furnished us specimens of two of their most recent preparations. One is an elixir containing a palatable combination of extract of beef, citrate of iron, and sherry wine; the other is a syrup of the lacto-phosphate of lime. The reputation of the manufacturers is a guarantee for the excellence of the ingredients used, and their combinations show much pharmaceutical skill. The wine of beef and iron, uniting nutrient and tonic qualities, will probably be found available in a large class of cases.

A Timely Explanation.—The *Pacific Medical and Surgical Journal* denies that the proceedings of the American Medical Association, at the late meeting in San Francisco, were marked

throughout by indecorum or want of harmony, and says: "The exception occurred at the only session which was held at night, and was manifestly due to California champagne, which some of the delegates had been sampling at the Oakland entertainment, supposing it to be as tame and inanimate as the champagne to which they had been accustomed elsewhere."

Statistics of the Medical Profession.—Dr. J. M. Toner, of Washington, D. C., publishes in the *Boston Medical and Surgical Journal* a synopsis of the information received by the American Medical Association regarding the number of medical practitioners in the United States and Territories. The whole number of physicians of all classes is stated at 49,798. This number is divided as follows: regular, 39,070; homœopathic, 2,961; eclectic, 2,860; hydropathic, 133; miscellaneous and unknown, 4,774. Estimating the population of the United States at thirty-nine millions, this would give one regular physician to every thousand persons.

A Curious Requisition.—A correspondent informs us of a "requisition" which can scarcely be recorded in any other than a medical journal. A staff-officer, in full dress, with white gloves, presented to the town of Mullhouse a demand for injection syringes and several kilogrammes of balsam of copaiba, which were sent in some days afterward. "History," says the Emperor William, in his address to the German Parliament, "will register the mighty deeds of the Prussians."—*Lyon Médicale.*

Hereditary Taint in China.—Dr. Ackland says the Chinese have very strict notions as to hereditary taint; chiefly, however, on moral grounds. The children of actors, among others, for three generations are excluded from the greatest privileges of citizenship, and capital punishments may follow unlawful attempts to exercise them. Not long since, thirty examiners, including an ex-chancellor, were put to death for admitting an actor to a competitive examination.—*Med. Times and Gazette.*

Treatment of Gonorrhœa by Water.—Surgeon H. F. Patterson, of the Royal Artillery, writes to the *Lancet* that he has,

for some time past, successfully treated all cases of gonorrhœa with water only. He begins with injections of lukewarm water and continues it once an hour till chordee and scalding cease, and then uses cold water in the same way until the case is cured. He uses no internal treatment, unless it be an occasional saline aperient, and says he has not had a single failure.

Old Ulcers in a New Light.—Prof. Fischer, of Breslau (*Journal of Cutaneous Medicine*), is of the opinion that chronic ulcers of the leg, if neglected, invariably lead to albuminoid degeneration of the kidney. If this be true, it invests the treatment of such ulcers with a peculiar interest. Dr. Fischer's views should be confirmed by observations in some of our large hospitals, which usually afford facilities only too abundant.

The Influence of Menstruation.—Dr. Rabuteau (*Gazette Médicale de Paris*) declares, as the result of extended experiments, that during menstruation the process of nutrition slackens, the pulse is diminished in force and frequency, the temperature is decreased half a degree, and that the amount of urea eliminated is diminished over 20 per cent. These changes begin before and continue for several days after menstruation.

Central New York Medical Society.—The fourth annual meeting of the Central Medical Society was held in Syracuse, June 20th, Dr. C. G. Pomeroy in the chair. The following officers were elected for the ensuing year: President, Dr. B. L. Hovey; Vice-Presidents, Drs. S. Gilmore and H. N. Eastman; Secretary, Dr. T. S. Brinkerhoff; Treasurer, Dr. A. Mercer.

From Medicine to Soap.—The *Georgia Medical Companion* contains an elaborate puff of a retired physician who has taken in his old age to the manufacture of "a superior quality of soap." This enterprising gentleman is described as "an old practitioner, having by his profession secured a handsome competency." Verily, genius will choose its own paths to fame and honor.

Copper in Bread.—Dr. Muter, an analytical chemist of London, has examined, it is said, twenty specimens of ordinary

baker's bread obtained in the south of London, and has found sulphate of copper in sixteen of the twenty specimens. The smallest quantity found in the four-pound loaf was 0.43 grain, and the largest 1.82 grain.

Clay in the Lungs.—In the *Annalen der Chemie und Pharmacie* Dr. Group-Besanez describes the quantitative chemical examination of the lungs of a workman who had been for many years exposed to the inhalation of mineral dust. He found in 1,000 parts of lung 19.91 parts of mixed clay, sand, and silica.

Heroic Medical Students.—It is worthy of record that the fine old cathedral of Notre-Dame was saved only by the courage and perseverance of a handful of medical students from the Hôtel Dieu, who frustrated the incendiary efforts and devices of the Communists, even after all sorts of combustibles had been piled about the altar.

Prof. Sayre abroad.—The *Lancet* mentions that Prof. Sayre was present in the operating theatre of University College Hospital on the 5th ult., and gave a short address on his method of treating joint-disease. His remarks are said to have elicited much applause.

Mental Alienation in France.—The number of cases of insanity caused in France by the excesses of the Communists is estimated by the *Medical Times and Gazette* at more than five hundred. Most of the victims are mothers, wives, sisters, or intended brides.

Medical Communists.—The medical members of the Commune and Central Committee seem to have fared better than most of their *confrères*, only two of them, according to the *Athenæum*, having lost their lives, Paricel and Miot, both of whom were taken prisoners and shot without trial.

Local Use of Pepsin.—Dr. H. S. Purdon, of Belfast, in a letter to the *Medical Times and Gazette*, mentions that he is experimenting with hypodermic injections of pepsin, hoping

to find its solvent properties useful in cases of enlarged glands, tumors, etc.

West Virginia Medical Society.—The annual meeting of this Society was held in Martinsburg on June 7th. The elections were, for President, J. M. Lazzell, M. D., of Fairmont; Vice-Presidents, Drs. H. J. Weisel, G. A. Hamill, and L. R. Charter; Secretary, Dr. W. M. Dent; Treasurer, Dr. J. C. Hupp. The Society adjourned, to meet in Wheeling in June, 1872.

Surgeons Killed in the Late War.—According to recent official reports published in Berlin, the loss of German military surgeons during the war was seventy-two killed in battle, and twenty-nine carried off by disease or accident. The loss was greatest at Gravelotte.

Lady Medical Students.—The *British Medical Journal* announces that there are now eleven ladies studying medicine in Edinburgh, and that there will be fifteen next session. Two scholarships have been offered to be competed for by the lady students in October next.

Resignations.—We are informed that Prof. Edward S. Dunster has resigned the chair of Obstetrics and Diseases of Women and Children in the University of Vermont; and that Prof. A. B. Crosby has resigned that of Surgery in the University of Michigan.

Congratulations for Harvard.—At a recent meeting of the Philadelphia Hospital Medical Society, resolutions were adopted extending congratulations to the Faculty of Harvard University on their encouraging advance in the matter of medical education.

Vaccination of Cats and Dogs.—A series of experiments is published in the *Lyon Médicale*, for March, 1871, by Drs. Peuch and Horand, on the inoculation of cats and dogs with vaccine lymph. The conclusion arrived at is, that neither of these animals is capable of developing vaccine virus.

Removal of the Strasbourg School.—It is proposed to transfer the Strasbourg Medical School to Lyons, and a deputation of

the professors has gone to Versailles to confer with the Minister of Public Instruction on that subject.

Severe Examinations.—Out of sixty-eight candidates who presented themselves before the London College of Surgeons, on May 24th, twenty-seven were rejected by the Court of Examiners.

A Testimonial to Mr. Paget.—Since the retirement of this eminent surgeon from the staff of St. Bartholomew's Hospital, a movement has been set on foot to "perpetuate his labors," and a fund for that purpose has been opened in London.

State Medical Societies.—The annual meeting of the Indiana State Medical Society took place June 20th. That of Wisconsin was held in Milwaukee June 21st, and that of Minnesota on June 22d.

Lady Students at Helsingfors.—The Emperor of all the Russias, says the *British Medical Journal*, has intimated to the University of Helsingfors his willingness to permit women to attend the medical lectures at that institution.

Appointment.—The position of visiting physician to Bellevue Hospital, left vacant by the resignation of Prof. T. G. Thomas last May, has been filled by the appointment thereto of Dr. Edward G. Janeway.

British Medical Association.—The annual meeting of this Society will be held in Edinburgh August 2d, under the presidency of Sir William Thompson, F. R. S., Professor of Natural Philosophy in the University of Glasgow.

Dr. Barnes.—This gentleman enjoys the distinction of having been elected by the Society of Physicians of St. Petersburg its first honorary member.

Cure of Leprosy.—According to the Madras *Athenæum*, a case of leprosy, which was treated in the hospital at Ootacamunds by carbolic acid, was perfectly cured.

Dust and Disease.—Mr. Tyndall's latest lecture on this, his favorite topic, is reported at length in *Nature*. We make the following extract in regard to the protection afforded by cotton-wool against those forms of evil which are inhaled with the air we breathe:

Once, then, established within the body, this evil form of life, if you will allow me to call it so, must run its course. Medicine, as yet, is powerless to arrest its progress, and the great point to be aimed at is to prevent its access to the body. It was with this thought in my mind that I ventured to recommend, more than a year ago, the use of cotton-wool respirators in infectious places. I would here repeat my belief in their efficacy if properly constructed. But I do not wish to prejudice the use of these respirators in the minds of its opponents by connecting them indissolubly with the germ-theory. There are too many trades in England where life is shortened and rendered miserable by the introduction into the lungs of matters which might be kept out of them. Dr. Greenhow has shown the stony grit deposited in the lungs of stone-cutters. The black lung of colliers is another case in point. In fact, a hundred obvious cases might be cited, and others that are not obvious might be added to them. We should not, for example, think that printing implied labors where the use of cotton-wool respirators might come into play; but I am told that the dust arising from the sorting of the type is very destructive of health. I went some time ago into a manufactory in one of our large towns, where iron vessels are enamelled by coating them with a mineral powder, and subjecting them to a heat sufficient to fuse the powder. The organization of the establishment was excellent, and one thing only was needed to make it faultless. In a large room a number of women were engaged covering the vessels. The air was laden with the fine dust, and their faces appeared as white and bloodless as the powder with which they worked. By the use of cotton-wool respirators, these women might be caused to breathe air more free from suspended matters than that of the open street. Over a year ago I was written to by a Lancashire seedsman, who stated that during the seed-season of each year his men suffered horribly from irritation and fever, so that many of them left his service. He asked me could I help him, and I gave him my advice. At the conclusion of the season this year he wrote to me that he had simply folded a little cotton-wool in muslin, and tied it in front of the mouth; and that he had passed through the season in comfort, and without a single complaint from one of his men.

A City founded on a Dunghill.—The *Lancet* thus describes the horrible sanitary condition of the city of Buenos Ayres:

The people breathe ordure, drink ordure, eat ordure, and live above the carefully-accumulated ordure of several generations. All the ordure of the city is poured into deep cesspools attached to each house, and these cesspools are simply wells, constructed as wells, sunk in the courts. In the same courts are sunk the wells from which water for drinking and domestic purposes is obtained. Both wells and cesspools are sunk in a stratum of porous soil which lies beneath the city. This stratum, having a depth varying from thirty to sixty feet, rests upon a bed of firm clay which forms a basin that retains the water from which the city obtains its chief supplies. Now the rule is, both for cesspools and for wells, *to sink to the water.* It is found that, by so doing, as to the former, the matters poured in pass away most freely, and that the cesspool lasts longer. But sooner or later the cesspool is filled, and the well becomes foul. Then the latter is converted into a cesspool, and another well is sunk in the court-yard. And this process may go on until room is not left in the court-yard to sink another well. From the method of procedure here described, it has come to pass that the whole of the subsoil water beneath the city is simply sewage; that this is so manifestly the case in some instances as to taint bread in the manufacture of which it has been used; that the atmosphere of the houses, courts, and streets is heavy with fecal and other filthy emanations; and that each family in the city actually lives upon its own dunghill! The water of the wells attached to the bakehouses, it may be added, is apt to be fouler than the common run of water from the stalings and dung of mules kept in the court-yards of the bakeries.

Abuse of Arsenic in Eczema.—Dr. J. S. Milton, in a paper on the treatment of eczema (*Medical Press and Circular*), strongly urges the propriety of a course of iron where the discharge is profuse, and even in the dry form of the disease where the improvement has come to a stand-still. He believes patients bear arsenic better after a course of iron, but of the indiscriminate use of arsenic he says:

One of the fashions or crazes of the day is, that of giving arsenic in every form of diseases of the skin. The extent to which this has grown of late years is almost incredible, and is, perhaps, only known to the druggists who supply the material. A few years ago arsenic was scarcely employed at

all internally, and was given with great caution or even withheld altogether in complaints like lepra, which could scarcely be cured without it. Nowadays, it is constantly prescribed in every case that proves the least refractory, and very often before any other medicine is used. Indeed, medical men often adduce as evidence of the obstinate nature of a particular case, that the patient has taken a quantity of arsenic without its doing any good. Why, I don't know, as certainly it never was recommended in every disease of the skin, and especially in the weeping stage of eczema, by those who are supposed to lead opinion. But there are some affections of the skin which never require arsenic, and many which only tolerate it at a certain stage. Among the latter is eczema. So long as ever there is a discharge of serum, arsenic never does any good, and often does a great deal of harm by inducing sickness, purging, headache, and general irritability. It is only of use when the dry stage has set in, and is not always called for then. Attention has often been directed to the injurious nature of such treatment as that of acute eczema with preparations of arsenic, but so far without result; indeed, the practice seems largely on the increase.

A Multitude of Counsellors.—Mr. Paget concluded his recent lecture on his own three-months' illness in the following words:

Sir William Lawrence used to say that he had not known any one recover on whose case more than seven had consulted. Our art has improved. I had the happiness of being attended by nine: Dr. Burrows, Sir William Jenner, Dr. Gull, Dr. Andrew, Dr. Gee, Mr. Cæsar Hawkins, Mr. Savory, Mr. Thomas Smith, and Mr. Karkeek. In this multitude of counsellors was safety. The gratitude I owe to them is more than I can tell—more than all the evidences of my esteem can ever prove.

Obituary.

A TELEGRAPHIC dispatch announces the death, on the 19th ult., at Cincinnati, of George C. Blackman, M. D., late Professor of Surgery in the Ohio Medical College. Dr. Blackman was born in 1819, and attained an eminent position while a comparatively young man. As a bold and skilful operative surgeon he was widely known both in this country and abroad, and at an early period of his career he was elected member of the Royal Medical and Chirurgical Society of London. Dropsy is mentioned as the cause of his death, but his health had been failing for some months past.

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Original Communications.

ART. I.—*Healing of Ulcers by Transplantation.* By Prof. FRANK H. HAMILTON, M. D., New York.

IN a report of my clinic at the Dispensary of Geneva Medical College for January, 1847, the case of a lad fifteen years old is given, whose leg had been in a great measure stripped of integument eight years before, and the wound had never closed. The report says: "Dr. Hamilton proposed to the boy a plastic operation, with the view of planting upon the *centre* of the ulcer a piece of new and perfectly healthy skin. (This proposition was first made to him two years before.) He proposes to take this from the calf of the other leg, *not intending to cover over the whole sore, but, perhaps, two or three square inches, which he believes will be enough to secure the closure of the whole wound in a short time.*"[1]

This lad did not consent to have me operate, and in 1864 he was still living, and the sore remained open.

My first operation of this kind was made January 21, 1854, upon Horace Driscoll, in the Buffalo Hospital of the Sisters of Charity. Driscoll had lost a large portion of the integument of his leg by the fall of a heavy stone upon it; and after the

[1] Buffalo Medical and Surgical Journal, February, 1847, vol. ii., p. 508.

lapse of fifteen months it was apparent that the ordinary processes of Nature were insufficient for its repair. A full account of this operation was published in the *New York Journal of Medicine* for the same year.[1] It may be found, also, copied into the *Buffalo Medical Journal* for December, 1854, vol. x., pp. 433, 438.

The integument was taken from the calf of the opposite leg, but was wholly inadequate to cover the entire sore. In ninety days cicatrization was complete, and it has remained so until the present day, or until a recent date, when I last heard from him. In the result it was observed that the new piece of skin had grown from its circumference in every direction, so that it was in the end nearly twice its original size.

In the paper referred to occur the following remarks: "By this means I hope, gentlemen, not only to supply an amount of skin equal to the size of the piece transferred, but to furnish also a nucleus from which additional skin shall be formed. I hope to establish a new centre of life—an oasis—from whose outer verge a true and healthy vegetation shall advance in every direction over the exhausted soil."

I further stated that the graft would not only grow, but that it would also expand centrifugally by the contraction of the surrounding granulations, as by the contraction of the granulations the skin about the ulcer is known to be drawn centripetally; and in confirmation of this also I referred to the case above described. The following summary closed my remarks:

1. Ulcers, accompanied with extensive loss of integument, do generally refuse to heal, whatever may be the health of the body or of the limb.

2. Anaplasty will succeed sometimes in accomplishing a permanent cure, and especially when the health of the body and of the limb is perfect, and when, by inference, the refusal to heal is alone attributable to the extent of the tegumentary loss.

[1] Old Ulcers treated by Anaplasty. Read before the Buffalo Medical Association, June 27, 1854, by Frank H. Hamilton, Professor of Surgery in the University of Buffalo, and Surgeon to the Buffalo Hospital of the Sisters of Charity.

3. The graft must be brought from a part quite remote; generally from the opposite limb, or from another person (because in no other way could the graft, with its pedicle attached according to my method, be carried to the centre of the ulcer).

4. *If smaller than the chasm which it is intended to fill, the graft will grow, or project from itself new skin to supply the deficiency.*

5. It is not improbable that the graft will *expand*, during the process of cicatrization at its margins, but especially for a time after the cicatrization is consummated. (This proposition I have since fully verified.)

6. In consequence of one or of both of these two latter circumstances, *it will not be necessary to make the graft so large as the deficiency it is intended to supply.*

In reply to Dr. Watson, of New York, who had said that anaplasty for the cure of old ulcers was not new, and that he had done the same himself, I answered in the number of the *New York Journal of Medicine* for January, 1855, that he had only repeated a very old operation of sliding in integument, and one which I had often made myself, long before my new suggestion was announced. "He had never yet thought of making the flap smaller than the space which it is intended to supply, and then trusting to growth and expansion to complete the cure. . . . He has not, therefore, adopted my procedure, nor obtained my results."

Since the date of my first operation, I have repeated the operation many times, and with almost uniform success. Last winter, at Bellevue Hospital, Dr. Gouley carried the operation a step farther than myself by applying it for the cure of an extensive burn of the *thigh*. Before operating, Dr. Gouley requested me to see the case with him, and to give an opinion as to whether my operation would succeed. I assured him that if he could engraft only a small piece upon the centre of the immense ulcer, success would be almost certain; but that, inasmuch as he must take the skin from the opposite thigh, I had some fears that he would lose the graft. It would be more difficult than in the case of the leg, to so cross the limbs that the pediculated graft could be attached to the centre of the

sore. Dr. Gouley made the operation; and, although only a very small piece was saved, the success of the operation has been nearly or quite complete.

In December, 1869, M. Reverdin, *interne* at La Charité, read before the Surgical Society of Paris a paper on Epidermic Grafting, which was published in the bulletin of the Society for that year, and also in the *Gazette des Hôpitaux* for January 11 and 22, 1870.

The method proposed and practised by M. Reverdin consists in detaching, with the scissors or with the knife, a minute piece of skin, the smaller the better, it is affirmed, and then burying it in the centre of the granulated ulcer; by which simple process a new centre of growth is established, and the sore is healed. The attention of American surgeons was first drawn to this interesting discovery by the experiments of Mr. Pollock, at St. George's Hospital, in May, 1870; and in the following August I commenced a series of observations in the same direction at the Charity Hospital, Blackwell's Island, where we have constantly under our care many hundreds of old ulcers. The results of my first experiments were given to the public by my house-surgeon, Dr. Williams.[1] Of fifty transplantations made either by myself or by Dr. Williams, only six were successful—the great disproportion of failures being due to the almost indiscriminate selection of cases, and to the great variety of methods which we adopted, our purpose being to determine the extent of its applicability, and to ascertain in what manner success would be most certainly attained. Since the date of these operations I have seldom met with a failure, except in those cases in which a failure has been predicted from the unfavorable aspect of the sore, or the instructions in relation to management have not been fully carried out. The following remarks comprise the results of the observations hitherto made, and in which nearly all observers concur:

The more healthy the condition of the granulations the better is the chance of success; indeed, with perfectly healthy granulations, success is almost certain. It is not material from

[1] Healing Ulcers by Transplantation. By H. R. Williams, M. D., late House Surgeon, Charity Hospital. Medical Gazette, December 3, 1870.

what point of the body the graft is taken, although it will be found most convenient to take it from some portion which is thin and flexible. With a pair of fine, mouse-toothed forceps the integument is lifted, and with the knife or scissors cut out. It is generally considered essential that the areolar tissue and fat should not be included in the graft: whether this is a matter of consequence or not I am unable to say; but it is certain that it makes no difference how small the piece may be: it is not necessary to cut so deep as to draw blood. Having cut out a piece as small as can be conveniently removed, we may proceed to divide it into several smaller pieces, nor does the amount of contusion which it suffers in this process seem to affect its vitality. After a trial of several methods of inserting the fragments, I have arrived at the conclusion that, if the granulations are fresh and vigorous, there is no better way than simply to lay them upon the surface without attempting to embed them by incisions, nor does it seem to be a matter of any consequence how they lie, whether with the raw surface turned in the one direction or the other. The grafts, when several are inserted simultaneously, should be placed at intervals of about one inch apart, as it is observed that the limit of growth of each separate piece does not in general exceed a diameter of one inch or thereabout. In order to retain them in place, I have generally used common adhesive plaster, reenforced by a few turns of the roller. If the operation of grafting is made upon either of the extremities, it will be necessary to impose upon the patient absolute rest, in the recumbent posture, but more especially is this required in the case of the lower extremities.

The dressings should be permitted to remain undisturbed two or three days, when they may be removed, and the sore made clean with tepid water and soap, and subsequently bathed with a solution of carbolic acid and water, of the strength of three or four grains to the ounce. The subsequent treatment will be the same as for an ulcer under ordinary circumstances.

When the dressings are first removed, what appear to be the grafts may be seen lying where they were originally placed, or floating loosely about. Sometimes they seem to

have disappeared altogether. It is thought that these points, which seem to be the grafts, are only the cuticle which has been sloughed off from the derma; but I am not able to say whether this is so or not. When they remain attached, the underlying process of development of new skin cannot be observed so accurately; but when they have floated away from their original position, we shall notice, first, a slight depression where they were deposited, which depression is in some cases substituted for a corresponding elevation a few days later—generally, I think, the point remains depressed; second, on about the seventh or tenth day after the grafting the centre of the depression or elevation assumes a bluish-white, opaque appearance, precisely like that which I heretofore described as appearing upon exposed bone when skin is beginning to form. By the aid of a glass the increased vascularity, and some degree of opacity, may be detected at an earlier period. This is the commencement of the process of skin-formation.

At the same moment, also, in which we discover that the transplantation has been successful, we shall see, in case a graft is placed within half or three-quarters of an inch of the margin of the ulcer, that skin is projecting from the margin toward the graft in the form of a minute promontory, so that, if I may be permitted to use a figure of speech, a bridge is soon formed in this direction between the island and the mainland; in a few days more the graft is lost in the surrounding integument, and becomes in its turn the outer margin of the greatly-diminished sore. Finally, all the grafts coalesce, each contributing an inch or less to the completion of the cicatrization.

Mr. Steele, who has contributed an excellent paper to the elucidation of this subject, is inclined to think that consecutive transplantations are better than numerous simultaneous insertions, and that each series gives fresh life and vigor to the whole surface.[1]

How far the new skin differs from ordinary cicatricial tissue I am not prepared to say, but it appears thicker and

[1] Clinical Lecture by Charles Steele, Esq., Surgeon to the Bristol Royal Infirmary. British Medical Journal, December 10, 1870.

more elastic, and it is certainly equally capable of resisting all ordinary destructive influences. Like cicatricial tissue, it is devoid of hair-follicles, sebaceous and sweat glands.

Later experiments have shown that success will occasionally attend the employment of much larger pieces than were employed by Reverdin. I have succeeded with grafts of the size of a five and ten cent piece; but portions are pretty certain to slough, and I doubt whether this method possesses any advantages which would justify its substitution for the much less painful and simpler method just described.

Mr. Fiddes, of England, claims to have succeeded equally by scattering upon the open ulcer the epidermis scraped from the surface of the skin with a dull knife. I have not made the experiment, but Mr. Woodman says he has tried, and has had no result.

Finally, to complete the narrative of experiments which have been instituted up to the present time, a graft has been taken from the leg immediately after its amputation, and its transplantation has proved successful; while Mr. Pollock has failed to generate skin with colored pigment, by transplantation from the negro.

Various theories have already been suggested in explanation of this wonderful process: the most plausible of which seems to be that the epithelial cell contained in the graft imparts to the granulations with which it is placed in contact a new and peculiar vital force, by virtue of which they are enabled to construct cells of the same character; in other words, that we have in this experiment an illustration of the doctrine of assimilation. In my original paper on transplantation for healing old ulcers, I stated several objections to this doctrine; but on the whole it appears, in the light of later experiments, less liable to objections than any other yet suggested. Like all the vital processes, however, it is likely to remain for a long time, if not forever, in doubt.

The range of the applicability of M. Reverdin's operation is not limited to the cure of large ulcers. We have already been able to substitute it for the usual forms of anaplasty in the case of contractions from burns and from other causes, by first dividing the tissues freely, and then, when granulations

are fully developed, inserting the grafts. In this way I have even succeeded in restoring to position an everted lid. It is equally capable of preventing contractions and deformities of limbs, by its timely interposition. At Bellevue we have covered by the same method exposed stumps, which would otherwise have demanded resection. No doubt, also, further experience will show many additional circumstances under which it will prove useful.

ART. II.—*The Pine-Forests of Georgia as a Resort for Invalids.* By EZRA R. PULLING, M. D., New York.

THE coniferous forest which extends in a broad belt parallel to the line of sea-coast between Cape Hatteras and Florida shows throughout much of its extent the existence of remarkable salutiferous agencies. The character and causes of these agencies appear to be little understood; some facts, therefore, in relation to the peculiar characteristics of the pine district of Georgia, which I was enabled to gather during a few months' residence there, may be of interest. They may, perhaps, serve to call the attention of physicians to a region easily accessible, which has a climate similar to that of Italy, which is free from malaria and from excessive humidity, and which, in connection with its indigenous forest-growth, possesses special therapeutic advantages that are probably more important to consumptive patients than thermal or hygrometric conditions.

The tract which I wish particularly to notice covers the greater portion of the tertiary region of the State of Georgia. This tertiary zone rises gradually from the coast, till at its western margin, one hundred and fifty miles from the sea, it attains the height of five hundred feet. Its sloping surface is broken by two abrupt elevations of about fifty feet each, presenting to the eastward a double series of escarpments, running parallel to the coast, at the respective distances of thirty and fifty miles from the sea. Both evidently mark the site of ancient beaches and indicate successive upheavals.

From the eastern range of cliffs, westward to the borders of the tertiary region, almost the entire surface of this area

consists of fine sand, which is underlaid at a variable depth by clay. It is covered almost solely by terebinthine-trees.

This uniformity in geological and botanical characteristics is interrupted by a few large rivers which form marshy valleys, having an average width of a mile, and a depth of twenty or thirty feet below the general level. These river-swamps are composed of alluvial deposits, and are totally dissimilar to the surrounding country in their soil, their flora, and their fauna. There are also occasional depressions into which the surface-water flows, leaving organic *débris*, forming swamps or *slashes*, which partake of the characters of the alluvial river-margins; they are of no great extent, except in the southern part of the State, where a few large marshes occur. In all these localities the different species of upland pines are replaced by a luxuriant growth of cypresses, live-oaks, sycamores, etc., which, draped in long, pendant, hoary moss, stand like grim-bearded sentinels guarding the deadly arcana of these paludal domains. These marshy tracts constitute less than one-tenth of the entire region under consideration; almost the sole indigenous product of the remaining area consists of a few species of highly-resinous pines, prominent among which is the *Pinus Australis* or long-leaved pine. This tree here attains a height of seventy feet; its straight, symmetrical trunk is destitute of branches for fifty or sixty feet; its limbs spread widely at the top, and its leaves, twelve inches long, hanging in graceful tassels, form most beautiful foliage.

Almost the sole vegetation growing in the shadow of these pines is the "wire-grass," which covers the hard, smooth, sandy surface with a thick elastic growth. The greater part of this tract is now covered with a primitive forest, and deer still browse on its verdant slopes.

The emanations from these pines appear to repress many kinds of vegetation and most of the lower forms of animal life. The dense shrubbery to be met with in other forests is here entirely wanting. Few reptiles are found, and the insect's hum is scarcely heard. The solemn silence that fills the sombre depths is broken only by the whisper of the breeze in the tasselled foliage, or rarely by the deep roar with which the tempest fills those stately aisles. Through this vast and park-like

expanse the air of winter is tempered to a vernal mildness. Intermediate in position between the Atlantic and the Gulf of Mexico, the climate is characterized by a greater uniformity of temperature than prevails on either coast. During a winter which I passed in this region there were but five days of frost; rain occurred on sixteen days, and there were about the same number of cloudy days, leaving nearly two months of calm, cloudless weather, with a temperature about the same as that which prevails in the State of New York during the month of September.

It is a well-observed fact that iron, when exposed in this pine-forest, exhibits far less tendency to oxidation than where a different growth prevails. The fact that turpentine absorbs ozone may have some connection with the above.

There is little dew, and it is noticed that exposure to the night air seldom affects injuriously the most delicate invalids. These statements apply to the *dry* upland district, excluding a zone of eocene fossils a few miles wide, by which it is traversed, and also some of the cretaceous formations of Southwestern Georgia.

The long-leaved pine (and in a less degree this is true of all other species) exhales not only large quantities of the vapor of turpentine, but also a peculiar aroma from its foliage, which, I think, plays an important part in its therapeutic effects. The former arises in great part from the dead pines, from which, as the exterior shell decays, the volatile portion of the turpentine passes off into the atmosphere, ultimately leaving the interior a mass of woody fibres and resin, which constitutes the "light-wood" used by the inhabitants for fuel and for illuminating purposes.

The remarkable physiological as well as therapeutical effects experienced in this region, though to some extent due to temperature and to the dry arenaceous soil, are, I think, mainly based on its coniferous forest-growth, which fills the air with resinous fragrance.

The terebinthine vapor, absorbed by the skin or inhaled into the lungs, manifests its presence in many strangers by producing slight strangury, which disappears in a week. The effect of a short residence here is usually to improve the appetite, and to increase most of the secretions.

With the exceptions above noted, the dry, arenaceous regions, bearing an indigenous growth of the long-leaved or the short-leaved pine, are free from malaria. This is, perhaps, partially due to the absence of rank vegetation prone to rapid decay, but I think that the complete exemption of the inhabitants from the diseases caused by paludal miasm is in great measure owing to the protective influence of these pines. Their exhalations perhaps destroy the febrifacient germs, as they do those of many cryptogams; they certainly possess decided antiseptic and disinfectant properties, and their effect in neutralizing many of the organic aërial poisons is marked and extraordinary. This fact is recognized by the residents in the vicinity of the malarious river-margins, who usually leave a belt of these trees, a few hundred yards in breadth, between their dwellings and the source of miasm. This secures immunity from paludal fevers, even within half a mile of the river-marshes.

That it is the terebinthine exhalations that exert this protecting influence is, I think, fully proven. The removal of this natural screen is usually followed by the spread of miasmatic diseases for some miles from their paludal source.

In certain cases where the protecting belt of pines was cut down, and febrile diseases subsequently made their appearance, the exposed residents naturally looked for relief to the second growth of pines on the same tract; their hopes, however, were generally disappointed; they found its protective influence vastly inferior to that of the original forest. The second growth is usually the old field-pine (*Pinus tæda*), which matures very quickly, but is deficient in turpentine. Did these trees oppose merely a mechanical barrier to the spread of paludal exhalations, the latter species should afford a more efficient protection than its predecessor, since it grows more closely and its foliage is more abundant.

These umbrageous wastes have long formed a pleasant and salubrious retreat for the enervated and malaria-stricken inhabitants of the sea-coast and "bottom-lands," during the summer months, though their hygiene is very imperfectly understood.

As far as malarious affections are concerned, the influence of the pine is preventive rather than curative; but there is

another class of maladies in which its effects are unquestionably therapeutic: I refer to chronic organic diseases of the lungs, and especially to pulmonary consumption. There not only exists a remarkable immunity from this disease in the dry pine-region, but phthisical patients who go thither often experience very great benefit, not unfrequently terminating in perfect restoration to health.

The dyscrasia which precedes the development of phthisis appears to be corrected by the special tonic and alterative action of the terebinthine vapor and aroma. Curative effects are more strikingly manifested when the local symptoms of consumption become serious and threatening. My own observation, and the testimony of many patients who have resorted to this region (though generally not under circumstances most favorable for a cure), indicate that a marked improvement in both general and local symptoms almost uniformly occurs within a short period. The terebinthine vapor very probably acts on cavities in the lungs, in the same way that balsamic substances usually do when applied to the ulcerated surfaces, resulting from low forms of inflammation, stimulating healthy granulation and promoting cicatrization.

These results are not, certainly, inseparably connected with thermal conditions. Consumption prevails extensively along the Southern Atlantic and Gulf coasts. It diminishes in the dry upland regions, but is no infrequent visitant to all localities where the coniferæ are absent.

In Southern Georgia is an immense pine-forest, whose continuity is unbroken, except here and there where the squatters have cleared an acre or two, on which they raise sweet potatoes and other vegetables. On this innutritious diet they largely subsist, neither cereals nor animal food being used to any great extent; yet, in spite of the tendency to dyscrasia likely to be thus induced, I am positive (for I made it a subject of special investigation) that, among several hundreds of these residents that I visited, not a single case of consumption or of tubercular cachexia could be found.

In fact, the inhabitants seem to enjoy almost perfect health. They are robust, well-knit, muscular, and present many instances of great longevity.

The mildness and dryness of the climate permit invalids to pass the greater part of the time during the winter in the open air without extra clothing. The equestrian can ride in any direction through the open forest, almost the only obstruction being, at rare intervals, the trunk of a fallen tree, while the meadow-like surface, with its elastic carpet of "wire-grass," renders this mode of exercise a positive luxury.

It is desirable that the effects of a residence among the pines on phthisical patients shall be tested under more satisfactory conditions than have hitherto been attainable. In that part of the pine-region where consumptives are likely to receive most benefit, no sanitarium at present exists, nor is there a single place where delicate invalids can rely on obtaining the comforts which they require. I hope this deficiency may soon be supplied, so that valetudinarians can avail themselves of all the local advantages which this region affords.

ART. III.—*Injuries of the Eye from Gunpowder.*[1] By THOMAS R. POOLEY, M. D., Assistant Surgeon to the New York Ophthalmic and Aural Institute; Clinical Assistant to the New York Eye and Ear Infirmary.

IT is my purpose in this paper to make a few remarks on injuries of the eye from gunpowder and fire-arms, and I will take as a text for my remarks several cases which have come under my notice.

The most frequent accidents from gunpowder in civil life occur in blasting and the explosion of fireworks. It is a common experience of those who are connected with an eye clinic or infirmary to see such cases on or about the 4th of July. Such accidents may affect the eye in several different ways: from the burning or scorching of the lids, either the external or lining membranes; from depositing in the external tissues of the eyes grains of powder, or grains of powder may even penetrate the globe. I will now, without further preliminaries, give the history of several such cases, and then point out

[1] Read before the New York Medical Journal Association, May 12, 1871.

what seem to me to be the interesting and practical features in each of them:

CASE I.—*Injury of Both Eyes from Gunpowder. Lodgement of some Unexploded Grains of Powder in the Cornea. Sloughing of the Right Cornea. Traumatic Cataract and Prolapsus Iridis of Left Eye.*

J. G., aged thirty, was sent to me by his family physician October 31, 1871. Three months before, he was injured by the premature explosion of a blast. When I saw him his face was thickly interspersed with grains of powder. In the right eye there was a large slough of the cornea, involving about its inner half, and the pupil was caught in the cicatrix; this part of the cornea showed a tendency to staphyloma. In the left eye there were numerous grains of powder deeply embedded in the cornea. There was a perforation at the nasal side, prolapse of the iris, and displacement of the pupil inward; the lens was cataractous. Pupil was contracted, eye much injected, perception of light good, but the patient could not discern objects. After removing all of the grains of powder I could in my office, I sent the patient to the New York Ophthalmic and Aural Institute. Both eyes were bandaged, atropine frequently instilled, and leeches applied to the left temple. Under this treatment the iritis subsided, and the sloughing of the right cornea became more circumscribed; the staphylomatous protrusion, however, was more marked. November 5th I performed Küchler's operation for staphyloma, which consists in merely passing a staphyloma-knife (Beer's cataract-knife is best) horizontally through the whole extent of staphyloma. The operation was done with a view of letting out the lens, and thus, by relieving tension, overcome the tendency to protrusion of the newly-formed tissue. The patient remained for three weeks in the institution, and was then discharged. His condition was very much improved. The iritis had almost disappeared, pupil was somewhat dilated. It was now seen that the cataract was not quite mature. He could count fingers in the external part of the visual field at 4′. In the right eye the slough had entirely healed, the staphyloma disappeared, the eye had become quite flat, and tension much reduced.

January 4, 1871.—He was again admitted into the institution for the purpose of having an iridectomy made. This

operation I performed on the left eye the same day, outward and downward, corresponding to the clearest corneal tissue. The right eye was atrophied, soft, and without the least perception of light (phthisis bulbi). The operation was followed by very slight reaction, the wound closed nicely, and the anterior chamber was fully restored the day after; there was a large, clear pupil. He remained for five days in the house, at the expiration of which time he was discharged. The eye was quite white and free from all irritation, V. $= \frac{5}{200}$. Soon after he was discharged, the cataract began to mature more rapidly; this he first noticed by diminution of vision about two weeks after the operation, until in about one month he was practically blind, being only able to count fingers at 1″ or 2″ in the outer part of the visual field.

February 16th.—He came to the clinic. The lens was considerably swollen, and there were some injection and irritation of the eye. Tension, however, was not increased, and the field of vision was complete. He was advised to employ atropine, and to defer any operative procedure until the cataract was mature and all signs of irritation had subsided.

March 20th.—Cataract was quite mature. The field of vision, tested with a candle-flame, was found to be entire, perception of light good. Tension normal; eyeball free from injection. It was now thought advisable to operate, which I accordingly did by discision. A small opening was made in the capsule, near the periphery of the new pupil. In my remarks on this case, I shall state why this mode of procedure was preferred to attacking the centre of the lens, or to extraction.

The following day he was free from pain, eye very slightly injected, some lens-matter escaping through the wound in the capsule into the anterior chamber. The third day after the operation there was a little more reaction; he had had headache all night, ceasing toward morning; injection more pronounced, lens-matter in the anterior chamber increased. The next day, however, the eye was again quiet, and continued free from further irritation. He was discharged at the end of a week. One week later he came to the clinic; the process of absorption was going on well. The opening in the capsule remained patent, and lens-matter escaping.

April 28th.—He was again admitted into the house, and I performed discision a second time. The wound made by the former operation in the capsule seemed to have closed, and absorption was at a stand-still. The needle was now entered at the inner and lower quadrant of the cornea, and the capsule opened more in the centre, between the wound made by the last operation and the nucleus. It was my intention to make a crucial incision in the capsule, but unfortunately I entered the needle too deeply into the lens, and, therefore, I did not enlarge the wound in the capsule. The operation was followed by severe frontal pain the night after the operation, and in the morning the eye was considerably injected; the iris was also injected along its pupillary margin, the lens much swollen. In the evening five leeches were applied to the temple. The next morning the pain had gone; the injection was less, but the iris was still vascular. He remained in the hospital for one week, and was then discharged, with moderate injection of the eye, perception of light good, iris vascular, no exudation into the anterior chamber.

Remarks.—This case illustrates what extensive injury may be produced by gunpowder. When I saw him the right eye was irreparably injured; under the most careful treatment it was impossible to prevent sloughing of the cornea, staphyloma, and subsequent wasting of the globe. It was decided, after consultation with Dr. Knapp, not to attempt the extraction of the cataract, but rather to trust to the safer although slower process by discision. It would have been impossible to have extracted the lens without exerting a dangerous traction upon the ciliary processes, as the iritic process had resulted in extensive attachments of the iris to the lens-capsule. Moreover, any operative procedure upon such eyes is always badly tolerated, and very apt to be followed by suppurative inflammation. It will be noticed, in making the discision, the capsule was entered near the periphery instead of attacking the cataract, as it is commonly done in this operation, at its centre. This I did to avoid wounding the nucleus of the cataract, the swelling of which, especially in such an eye, and in an adult, would have produced too much swelling of the lens. I therefore selected by preference the cortical

portion of the cataract, made the puncture in the capsule very small, and did not break up the lens at all. My object was to produce slow absorption of the cataract, and thus to avoid all unnecessary risk to the patient by rapid swelling of the lens. Dr. Knapp has operated in a similar case in the same manner and with good results, the patient now having very good sight. The second discision was followed by more reaction on account of the greater breaking up of the lens, and I fear the needle (although a stop-needle was used) was entered too deeply into the lens-substance. There is great fear of the inflammation thus excited spreading to and producing opacities in the vitreous, which will, of course, impair the result of the operation. I do not say that such a cataract may not be successfully extracted; indeed, I have quite recently seen a patient who had had a traumatic cataract produced by gunpowder, who was successfully operated on by extraction by Dr. Derby, of Boston. But in this case the other eye was quite good. I do not think it would have been justifiable, however, in my case, where the patient only has one eye left, to have submitted him to the more hazardous operation of extraction. One or more operations will most likely have to be performed before the patient will see, and at best I fear but little vision will be obtained.

I will avail myself of some future occasion to inform the Society of the progress of this case.

Case II.—*Penetrating Wound of the Sclera. Foreign Body in the Eye.*

W. P. consulted me January 7, 1871. One week before I saw him he was accidentally shot in the face by a pistol loaded with fine shot. He lives in the country and was sent to me by his family physician. Several of the shot entered the face, forehead, and ear, and one of them penetrated the right upper eyelid and entered the eye. The eye was wonderfully free from irritation, only slightly injected. There was a small penetrating wound in the sclerotic, just behind the corneal margin, in which a small bead of vitreous protruded. The pupil responded well to light, the lens was uninjured; perception of light good. F. was entirely wanting above and below, but good on either side and in the centre. Counts fingers in

inner and outer part of F. He was entirely free from pain or annoyance of any kind, except the failure of sight.

With the ophthalmoscope no distinct view of the fundus could be obtained, on account of hæmorrhage in the vitreous. A faint reflex was obtained when the patient looked upward. A whitish line was also observed in the vitreous humor, extending from the wound inward and downward. The same day he was admitted under my care in the Ophthalmic and Aural Institute. He was put to bed, a compress bandage applied, and atropine instilled three times a day. The pupil dilated *ad maximum*. He remained in the institution for one week under careful observation, during which time the eye continued free from pain or irritation, and the wound in the sclerotic entirely closed. Detachment of the retina was suspected, but could not be clearly made out because of the hæmorrhage in the vitreous.

March 16th.—The patient came to my office; the external appearance of the eye was unchanged. O. S. showed fan-like exudations radiating from the wound through the vitreous in every direction, having very much the appearance of detachment of the retina. I now saw the patient about once a week at my office. His condition remained much the same. The eye was free from irritation, other than he occasionally had flashes of light before it.

March 24th.—When I last saw him his sight had increased so that he counted fingers at 5′ in the external and at 3′ in the inner part of visual field. He had a small central scrotoma. The field of vision was still wanting above and below, flashes of light more frequent. With the ophthalmoscope, the membranous bands, extending through the vitreous, as well as the white line before mentioned, more plainly seen; also some floating opacities in the vitreous. In the outer and lower part of the fundus (upright image) there was a reddish-looking elevation, probably a blood-clot, which marked the site of the foreign body. The eye gave him no trouble. The other eye was perfect V.=1.

Remarks.—The points of interest in this case are as follows: The long residence of a foreign body in the eye without producing severe inflammation. The entrance of a foreign body

in the eye is usually followed by severe inflammatory reaction; suppurative choroiditis soon ensues, and the eye is lost. While such is the rule, cases are not wanting where, as in my case, a foreign body has continued within the eye, and yet useful vision has been retained. It seems rational to suppose that a perfectly smooth, round body, like a shot, would be a more harmless resident than a more irregular body, because it will produce less irritation. However, I cannot consider an eye invaded by even such a foreign body as safe. It is possible that the shot may become encysted, and remain quiet without ever producing further trouble. Again, it may just as well change its position, if not firmly fixed in the back of the eye, become dislodged, come in contact with the ciliary processes, provoking irritation, inflammation, and even sympathetic affection of the other eye. I cannot, however, fall into the same way of reasoning as so many do about such cases. Lawson says, in speaking of this class of injuries, if we are sure the shot or foreign body is in the eye, and all sight is lost, it should be at once excised: there is no occasion to wait for urgent symptoms. In such an opinion I do not fully concur. It may be, perhaps, the safest plan, but still it seems to me, where we can have the patient constantly under observation, we are not justified in acting so quickly, but ought rather to wait for some symptoms of irritation and pain before resorting to enucleation. In my case it is true that no foreign body within the eye was actually seen, but only strongly suspected. All the symptoms, except the want of irritation and pain, are in favor of such a supposition. The depth of the wound and the escape of vitreous argue against the shot having glanced off. Again, the failure of the visual field is in favor of the foreign body remaining in the eye. Dr. Berlin, of Stuttgart, in a paper on this subject, in the *Archives of Ophthalmology and Otology*, vol. i., No. 1, p. 30, has shown the importance of this symptom for determining whether there is a foreign body remaining in the eye. And I have published a case in the Transactions of the American Ophthalmological Society, 1870, in which the diagnosis was founded on this symptom alone.

The whitish line extending from the wound through the vitreous was also favorable to such a view of the case. It has

often been observed that the course of a foreign body through the vitreous may be traced by such a line of opacity.

CASE III.—*Foreign Bodies in Both Eyes.*

The following case is transcribed from Dr. Aub's book, to whose kindness I am indebted for the notes: F. K., aged eleven, June 30, 1869. Patient was injured yesterday by an explosion of gunpowder. As much as possible was removed at the time. S. P. L. E. movements of hand only seen; corneal ulcers, hypopyon. On the inner side of the iris lies a grain of powder enveloped in a yellowish mass. Inner half of iris swollen, pupil irregular, somewhat dilated, filled by a grayish-yellow exudation. R. E. S. tolerably good next day; L. E. much clearer, and hypopyon absorbed. On the anterior capsule are the remnants of exudation, extending over the inner half of the pupil. Behind the lens, in the vitreous, a collection of pus is seen, situated internally and somewhat superiorly. Count fingers at 6″; much photophobia. In the R. E. the remnants of powder left are causing much ulcerative process; little reaction, sight the same.

July 2d.—Right eye inflamed, anterior chamber dull, and filled with mass of exudation. The anterior part of iris swollen, and with the aid of oblique light a perforation of the cornea and iris can be seen. The grain of powder supposed to be either in the lens or vitreous. Iridectomy was made inward, and that portion of the iris which was swollen and perforated excised; as it was withdrawn a portion of the exudation in the anterior chamber came with it; a portion remained attached to the anterior capsule. After the operation we could see, in the internal sector of the lens, a black streak surrounded by pus, proving to a certainty that the grain had passed into the lens, but not that it was still there. Behind the lens opacities in the vitreous could be seen.

July 3d.—Patient complained of much pain during the night. Cornea is very dull; anterior chamber filled with a cloudy fluid. Exudation at the place where the iris was excised prevents a view of the lens. About the centre of the pupillary opening is a small, clear space, through which the patient can distinguish, without defining, objects. Much circum-corneal injection; hypopyon; profuse lachrymation.

July 5th.—Pain materially lessened by cold applications. The fluid in the anterior chamber has partly coagulated from the periphery toward the centre, allowing the periphery of the iris and the inner wound to be seen, but closing up the pupillary opening. The iris is of a grayish yellow, and appears to be infiltrated with pus. At the inner margin of the wound a portion of iris is seen detached from the rest, and fastened in the wound. Little pain.

July 7th.—Patient doing comparatively well. The clot more dense, exposing more of the iris; only perception of light left; circum-corneal injection diminished.

July 10th.—Injection reduced; hypopyon gone. Clot in anterior chamber diminished, only taking up the pupillary space. Entire iris visible and looks more healthy; can distinguish movements of the hand.

July 13th.—Still some circum-corneal injection; clot in anterior chamber lying close against the wound made by the iridectomy, causing the lower part of the cicatrix to expand, and project above the surface of the globe. The lens externally nearly clear, while internally, where the grain of powder passed, it is opaque; no pain. Patient discharged from indoor treatment.

July 17th.—Came to the clinic. Condition same as when last seen, with the exception that the cicatrix has now the resemblance of a small cyst, and that a clot of purulent matter can be seen in the vitreous.

July 23d.—The cystic expansion of the cicatrix resembles a large white bead, and projects above the globe 2‴. It was excised, when pus escaped; eye much redder; no sight, no pain.

August 15th.—Since last report the external appearance of the eye has improved. Anterior chamber is entirely lost; pupil closed and drawn toward the wound. The granulation in the cicatrix contracted, and looks like a small red button.

August 25th.—The patient having still some pain in the eye, it was thought advisable to enucleate the globe, which operation was performed by Dr. Knapp. The tissue enveloping the eyeball was found thickened and adherent in every direction, rendering the operation unusually difficult. The patient was discharged after the usual course of healing, with a good stump,

permitting extensive movements. Since then the other eye has remained good, and he has had no further trouble. The chief interest which attaches to this case is the fact that the grain or grains of powder were driven with such force as not only to enter the lens, but pass through it into the vitreous humor. The course of the inflammation so well described in Dr. Aub's notes of the case is that which usually follows the entrance of a foreign body in the eye. However, the irido-choroiditis was not so violent as we sometimes see, but rather of a more sub-acute character. Dr. Knapp has shown that such injuries are especially apt to give rise to irido-cyclitis of a plastic character, with a tendency to the formation of new-formed connective-tissue bands which extend into the vitreous.

Case IV.—*Penetrating Wound of the Cornea and Lens by a Grain of Gunpowder.*

F. S., aged fifteen, was injured the 4th of July, 1870, by the flashing of some gunpowder into his face while trying to fire off a small toy-cannon. The day following he came to the Ophthalmic and Aural Institute. There were a few grains of unexploded powder in the face and eyelids. A single grain of powder had struck the right cornea with sufficient force to penetrate it. Upon the cornea a little below and to the nasal side of the pupil was a small penetrating wound, and immediately behind it a small wound in the lens-capsule. In the anterior portion of the lens was a small circumscribed opacity about 1‴ in diameter. The eye was only moderately injected. Atropine was ordered. The boy remained under treatment for about three weeks. The corneal wound entirely healed; the wound in the capsule also closed, and the small opacity in the lens did not increase. Since then he has occasionally come to the dispensary, merely for the purpose of showing his eye.

April 12th.—I examined his eye carefully. The pupil was dilated with atropine; upon the cornea in the locality mentioned was to be seen a small opacity, and behind it the cataract, which had remained entirely stationary. The eye was quite free from injection, pain, or annoyance of any kind. $S = \frac{20}{100}$. There was some irregular astigmatism, probably due to the alteration of curvature in the lens caused by the cataract.

Remarks.—The interest of this case is the stationary character of the cataract. As we have seen in our other cases, grains of gunpowder may be propelled with sufficient force to penetrate the cornea and lens, and even to pass through it to the deeper parts of the eye. In this case, however, the propelling force only seems to have been sufficient to penetrate the cornea and enter the lens-capsule without passing deeply into the lens. It is, however, very rare to see even such a small wound produce only partial cataract; any wounding of the capsule, as a rule, will give rise in time to a complete opacity of the lens by imbibition of the entopic fluid. That such a partial, non-progressive cataract may result from injury, is proven by this case. I have also seen another case illustrating the same fact. The injury to the capsule in this case was supposed to have been made with the forceps in performing an iridectomy for closed pupil from syphilitic iritis; at all events it was observed after the operation as a small circumscribed opacity in the periphery of the lens. The case was under my notice for some length of time, and the opacity did not increase in the slightest. It is altogether probable that a small opening was made in the capsule with the teeth of the iridectomy forceps. In the case now under discussion, the grain of powder no doubt lies embedded in the lens, and is, so to speak, the nucleus of the lenticular opacity. The wound in the capsule must have been very small, and probably closed shortly after the injury, before the aqueous humor had had much time to enter and act upon the lens. Any attempt at the removal of the particle of powder would only have increased the cataract; indeed, it would have been impossible to extract it without at the same time removing the lens. Dr. Knapp, therefore, as the opacity evidently did not progress, decided to keep the patient under observation, and not to resort to any operative interference. The result fully justifies such a conclusion. The acuity of vision in the injured eye is about the same as in the other. The patient has a pretty high degree of hyperopic astigmatism in both, but rather more in the injured one. The diminution of vision would of course be much more if the cataract had been more central; the fact of the opacity falling a little below the centre of the pupil must be considered

a fortunate circumstance. If the opacity had been more central, it would have been necessary to have made a small iridectomy to allow the rays of light to traverse the transparent part of the lens.

ART. IV.—*Duality of the Chancrous Virus.*[1] By S. L. JEPSON, A. M., M. D., formerly Resident-Physician in the Cincinnati Hospital.

THE study of syphilis is not, I am aware, of as universal interest to the profession as many other topics in medicine; and yet, when we consider the fearful extent to which the disease prevails, among all classes of society, and the disastrous consequences that may result to the individual and the family, especially if the affection be not skilfully treated, it behooves every physician to correctly inform himself concerning the nature and treatment of this malady, no less than of those whose study may be more agreeable. As a knowledge of pathology is the foundation of all intelligent therapeutics, we shall endeavor, in the light of this fact, to examine the disease under consideration.

The question touching the duality of the syphilitic poison shall particularly claim our attention; and by this we mean to inquire whether there are two distinct poisons of venereal origin, apart from that of gonorrhœa, invariably producing two distinct sores or ulcers, commonly called chancres, of which ulcers, the one, commonly called "hard chancre," "Hunterian chancre," "infecting chancre," "true chancre," or simply "chancre"—by which latter name we shall call it in this paper—is invariably followed by constitutional, or secondary and tertiary symptoms; and the other, called "soft chancre," "non-infecting chancre," or "chancroid"—which name we prefer—is invariably a strictly local affection, never being followed, whatever aggravating circumstances may arise, by constitutional results. The question may be briefly stated thus: *Is there a duality of the chancrous virus?*

[1] Read before the Medical Society of the City of Wheeling and County of Ohio, West Virginia.

Having been educated long since the duality doctrine was first presented to the profession, and under teachers of the Bumstead school, who scarcely admit a doubt as to the truth of the doctrine, I of course found myself accepting the idea, and, without perhaps examining carefully both sides of the question, exercising a faith which, as a peculiarity of young men, may have partaken somewhat of the dogmatic. After considerable study of the subject, however, including the close observation of not a few cases, and the examination of all works touching the subject within my reach, I find myself now even more firmly grounded in the faith. If the new doctrine be correct, it should be disseminated, and enforced by argument and proof until all believe. Though having very many advocates in the large cities, I feel convinced that outside of these it has not been generally accepted by the profession. In this belief I write, premising the remark that I attempt to present nothing recent or original on the subject, but rather to bring together, into as brief a space as possible, facts and investigations, the records of which may be found scattered through various publications, but nowhere, so far as I have observed, combined in a single article.

In order to understand our subject fully, it becomes necessary for us to go back as nearly as may be to the origin of syphilis, and to trace briefly the history of the disease, noting the changes which gradually took place in the minds of the profession, touching its origin, nature, etc., and in so doing we propose to derive a substantial argument for the position we advocate. The argument, which we give briefly in advance, is this: the chancroid, with its complications of phagedæna and bubo, existed as far back at least as the time of Hippocrates, and have ever since existed. Constitutional syphilitic symptoms never existed prior to the year 1493 or 1494. Hence, since like causes ever produce like effects, constitutional syphilis does not result from the chancroid; and hence a new and distinct poison must exist, viz., that of the chancre.

Perhaps no one who has at all examined the subject will doubt that the chancroid did exist prior to the fifteenth century; but, that the history may be complete, we give some evidence on this point. On examining the writings of an-

cient and mediæval times, many allusions and even descriptions are found, which point to this disease in terms too plain to be mistaken. In Coxe's Epitome of Hippocrates and Galen, we find the following, when treating of the diseases that prevailed in the days of the former writer: "Great fluxes upon the private parts, with ulcerations, tubercles outwardly and inwardly, were frequent. Also swellings in the groin; inflammations of the eyes that were humid, and of long duration and painful." The humid inflammation of the eyes here mentioned probably refers to the inflammation arising from the contact of gonorrhœal virus, resulting from carelessness and ignorance of the nature of that poison. "Celsus is even quite explicit," remarks Bumstead, "and clearly describes the simple, phagedenic, serpiginous, and gangrenous venereal ulcers which are recognized at the present day." He also describes the complications of phimosis and paraphimosis (Vidal, p. 14). We also find attention called to these diseases in "Renouard's History of Medicine," Comegys, p. 344. Says that excellent work: "Hippocrates, Galen, Celsus, and the Arabian physicians make mention . . . of pustules, ulcers, phlegmons, excrescences, and crusts located on the genitals and neighboring structures. The Latin satirists, Horace, Juvenal and others, describe some symptoms of this kind as being the fruit of a shameful lubricity."

Coming down to the works of a later period, we find the writers of the middle ages even more explicit than those we have quoted. Wm. de Salicet, in his book "De Apostimate in Inguinibus," published in A. D. 1290, says, as liberally rendered by Vidal: "And the bubo occurs when a man has a disease of the penis from connection with an unclean woman, or from every other cause, which gives rise to an accumulation of corruption in this organ, which corruption, being unable to find an exit, returns to the groins." Lanfranc, a pupil of Salicet, also writing in the thirteenth century, gives at least an equally clear description of this disease, and its mode of propagation. "The ulcers of the penis," he says, "proceed either from hot pustules, or from commerce with a woman who has been previously affected in the same way." Again: "Often an abscess comes in the inguinal region, on account of an ulcer

of the penis, because there is a descent of the humors to those parts" (Vidal). In 1290 Lanfranc wrote instructions as to preventive means against ulcers of genitals. Bernard Gordon, who was a professor in the University of Montpellier, in 1300, says that "diseases of the penis are numerous, following lying with a woman whose womb is unclean, full of putrid sanies, virulence, etc." (Acton, p. 18).

From these quotations—and many more might be presented, were it deemed necessary—it is certainly evident that a disease of the genitals, consisting of ulcers, and often accompained by buboes in the groins, existed as far back almost as any medical records go, and *certainly* prior to the fifteenth century.

Accepting this as true, a question here presents itself of vital interest in this discussion, viz.: Did constitutional symptoms of syphilis, as eruptions, alopecia, nodes, osteocopic pains, etc., exist previously to that period? No positive answer, perhaps, can be given to this question; but in our search we have been entirely unable, while meeting with so many unequivocal evidences of the early existence of the local affection, to find any proof whatever, at all trustworthy, tending to show the existence of constitutional syphilis prior to 1493, about which time, as we shall hereafter see, a terrible disease, whose general character was identical with syphilis as now familiar to us, for the first time made its appearance. On this one fact, viz., the entire absence of all historical evidence of the previous existence of the general disease, while we have so many and such accurate descriptions of the local affection, we might rest our argument against the antiquity of constitutional syphilis. This historical silence, to use the words of Victor de Meric, "is not true of small-pox, the essential fevers, hydrophobia, and other complaints, which are mentioned in the remotest records." Why should it be the case with this disease, which is capable of causing much more fearful ravages, at least with the individual, than any of the above?

But other proofs to support our position may be adduced. And one important point is, the fact that *hereditary* syphilis was unknown to the ancient and mediæval writers, the first account of this form of the disease being given by Gaspard

Torello, who, in 1498, "spoke of syphilis in infants at the breast" (Bumstead). Again, in 1529, Paracelsus "clearly stated that the affection descends from parent to offspring" (De Meric). And in 1536 he calls it a disease "more hereditary than leprosy" (*idem*). Now, is it possible that this terrible malady could have existed for century upon century, and yet no discovery be made, or if made not noted, of the fact of its transmissibility from parent to child, a fact which was both observed and given to the world in a very few years after the outbreak of the fifteenth century? We have too good an opinion of the medical profession of early days to yield this point. Our only explanation of this silence concerning the congenital affection then, is, that *syphilis did not exist*, and consequently the congenital form of it was unknown.

Again, if the general affection had always existed, why the horror and amazement, and the evident total ignorance of its nature, among the medical writers of the fifteenth century, when the disease made its appearance in Italy in 1493 or '94 (Bumstead)? Those men were certainly perfectly familiar, as we have abundant proof, with the ulcers and buboes which mark the local disease, and even understood well its treatment. But here they recognize something new—something they had neither seen nor read of before; symptoms entirely at variance with, and much more destructive than, any disease they had ever before known, of venereal origin. As a consequence, they become alarmed; they attribute the outbreak of the awful malady to "the conjunction of Venus and Mars;" "to some fatal influence of the stars" (Acton); "to a malignity of the air caused by an overflow of the Tiber" (Copland); to the vengeance of Heaven, "sent as a punishment for blasphemy" (Bumstead, from a decree of the Emperor Maximilian I., promulgated by the Diet of Worms, in 1595); or as a punishment for "fornication and adultery, which were practised by men contrary to law" (Bumstead); and the "atmosphere was by some considered the vehicle of the morbific principle" (Vidal). From these facts it is evident, not only that this destructive disease was recognized as *new*, but that its origin in sexual intercourse, and propagation thereby, were entirely unsuspected; and hence that its resemblance, in its primary lesion,

to the chancroid, was not even known, much less were the two regarded as identical. Indeed, these two affections were treated of in separate chapters of the early works on this subject, and as entirely distinct diseases. Such was the horror which the advent of the new disease created, that when the symptoms appeared in the person of Joseph Grunbeck, a German physician, we are told "his dearest friends at once turned their backs upon him, and fled as if they had seen an enemy's sword suspended over their heads" (Bumstead, from Grunbeck). He himself became dejected, and, retiring from the world, gave himself up to solitude and gloom.

But we have more direct testimony, in their own writings, that the physicians of the fifteenth century regarded this as a new disease. Philip Beroald, who died in 1505, though acknowledging his ignorance of the origin of this scourge, well describes some of its phenomena, and states that it "was unknown to his ancestors;" that whatever others may name it, he desires to call it "*morbum pestiferum diuturnum;*" that he prays: "May this disease, more destructive than any pestilence, depart and return to the gulf of hell whence it came!" James Cataneus, a Genoese, writing in 1505, speaks of the terrible disease appearing in 1494, "which was never before known in any age; which was new to the whole world," etc. George Vella, writing in 1508, said, "It is certain that, before the existence of the French disease, certain women communicated to men, by coitus, ulcers which were never followed by that assemblage of symptoms which makes up the new disease" (Bumstead from Bassereau). John Baptist Fulgosus, Doge of Venice, in 1509, Leonard Schmans in 1518, Ulric von Hutton in 1519, and Fracastorius in 1521, all believed that the disease was entirely new in Europe, but supposed it came from America or other foreign country. In 1530 Fracastorius writes at length on the subject, always speaking of syphilis as the *new disease*, and giving a very full and correct account of the symptoms, as they first appeared; and a few years later, in 1548, Fernel gave another very excellent description of the affection, from which we may be pardoned for quoting at some length, inasmuch as his account is remarkable for the clearness, fulness, and general accuracy, with which the symptoms

are given, even as we find them at the present day: "On whatever part of the body the *lues* first settles," remarks this old writer, "there fixing itself it excites a pustule, and soon after a small ulcer. Thence extending farther, it fixes its roots, and sensibly penetrates the interior by a forced, unceasing action; and in fine, unless you shall have opposed to it some remedial measures, it devastates and commits ravages on the whole by its virulence. From this it is manifest that *a certain poison* constitutes the essence of the disease, creeping over or insinuating itself into the whole body, in no manner differing from the poison of the rabid dog or scorpion. The signs of it are various, depending on the nature of the parts over which it spreads. When the virus, for the sake of illustration, has its origin in copulation, from the private parts bedewed with moisture, it determines, first, pustules in those parts, which are very obstinate, and then small ulcers which are difficult to treat, and are of rather a bad character. . . . The poison afterward becomes disseminated in the limbs, muscles, and skin, and having been repulsed it breaks out silently, and worse than before. Livid and reddish pustules occur, ulcers covered with crusts and tetters; in some persons excavated and malignant ulcers, and in bilious persons phagedenic and corroding sores; and in the melancholic temperament cancrous and cancerous ulcers; in the phlegmatic they are more superficial but more foul, and discharge a fetid, mucous humor; and in sanguinous persons they are more thickly set, and resemble carbuncles. All indeed with very hard, indurated, tumid and inverted edges, which (ulcers) having eaten the flesh, feed upon the bones themselves, at first the thin bones, as for instance those of the palate and nose, then those of a more solid consistence, which, becoming putrid and carious, are thrown off. . . . If the humors which collect on the head point under the scalp, or if the disease should be determined toward the joints and limbs, they excite most dreadful and daily tortures, increased greatly at night; or they excite very hard tumors, by no means free from pain. . . . The matter, hiding itself under the periosteum, produces pain both by its acrimony and by distention. . . . But the effects of the disease are not confined to the external parts alone. They

extend to the internal parts, affecting even the viscera, which are found on dissection covered with pustules and ulcers" (Acton, p. 20).

Here we have a description of the ravages of syphilis—the chancre, chancroid, and general syphilis, being included by the writer—which for accuracy, though written nearly four hundred years ago, can scarcely be excelled even now, with the greatly-increased light which modern investigation has thrown upon the pathology of the affection. Is it possible that men capable of making such accurate observations would have failed to leave some record of constitutional syphilis, had it appeared prior to this recorded outbreak? It seems improbable, to say the least, and yet no record of any former existence of the disease remains.

Coming down through another century of time, we find Van Helmont, in 1640, still adhering to the belief in the late origin of this affection, and publishing his theory that it originated in the fifteenth century, "from unnatural connection between a man and a horse laboring under farcy" (Acton). Again, in 1736, we find Astruc, physician to Louis XV., a man acknowledged to be of vast learning and research, after most diligent examination of this vexed point, collecting dates and quoting authorities, all going to prove that, prior to 1493 or 1494, syphilis did not exist in Europe. Whether or not it existed previously in America (Astruc argues that it did), does not affect our argument.

It may be said, however, as indeed is done by those who believe in the antiquity of this disease, that syphilis changed character, and assumed greater intensity, about the year 1494, on account of the filth, debauchery, and excesses necessarily surrounding the camps and attending the marches of great armies, a war being then in progress, and the great army of Charles VIII. of France being occupied in the siege of Naples. He knew, too, that debauchery and neglect of health do materially aggravate the symptoms of this affection, which lends color to this view. But, as we have shown, no proof of its former existence can be found, even in a milder form, unless we believe that the local affection, which is described by the early writers we have quoted, be identical. But can it be pos-

sible that filth, neglect of health, debauchery, or any aggravating circumstances whatever, could so change the nature of disease, as that that which was once purely local becomes constitutional, and not only that, but *continues* constitutional in successive generations? Even if such could be the case, it is scarcely possible that, in the many centuries which had passed, no victim of the local disease had subjected himself to such neglect as that the constitutional symptoms would appear. On the contrary, many hundreds must have experienced this change, had any change been possible. And yet, we repeat, no record of the general disease remains. Can we, in the light of these facts, and in the absence of all authentic evidence to the contrary, do other than accept as true, what is, indeed, accepted generally by syphilographers, if not by the profession at large, that the "*morbus pustularum*," as syphilis was at first called, is *not* of ancient origin, but, on the contrary, appeared for the first time near the close of the fifteenth century!

And here we may met by the inquiry, If syphilis be not of remote origin, what *was its cause?* This is a question, however, that does not in any way affect the point in dispute. Since the disease exists, it must have had an origin and a cause, and to call this origin "ancient" simply shifts the question some centuries away. The question as to the *cause of disease* is one of the most difficult of solution in the whole range of medical science; and is it then wonderful that the same question, as applied to the disease under discussion, is equally unsatisfactorily answered with that of many diseases even familiar to us? It has appeared to me, however, that some theories as to the cause of disease have been presented to the profession, equally devoid of direct proof, and even less plausible, than the one promulgated concerning the origin of syphilis, in 1640, by Van Helmont, and again mentioned with approval in 1854, by Victor de Meric, viz., the possibility of syphilis having arisen from the glanders, which is known to have prevailed among the army-horses during the siege of Naples, about which time the new disease appeared. Is it impossible, as suggested by De Meric, that some of the loose female characters already laboring under simple ulceration,

and hovering around armies, might have been infected by an individual suffering from glanders, or having about him some infectious secretion originating from a diseased horse? A mixture of the poison from glanders with the unhealthy and decomposing secretion from dissolute females may have given rise to the dreadful malady which has for centuries undermined the health of generation after generation. Proof there is none, but a tolerable share of probability (*Lancet*, 1858).

Leaving now the question concerning the origin of this disease, let us glance hastily at the progress of the profession in the study of its pathology. We have indicated that the origin of syphilis in the venereal act was at first unknown; and so it continued to be for some time after its advent into Italy, the disease prevailing to such an extent as to deceive the physician, by fixing upon his mind the idea that it was epidemic, and of atmospheric origin, if not directly supernatural. The mode of transmission, however, was ere long discovered, though perhaps few had very clear ideas on this subject until Fernel traced the disease from one person to another, recognized the venereal act as the starting-point, and, in fact, gave both primary and consecutive symptoms in a manner clear and satisfactory. "Necessity is the mother of invention," and the incentive to discovery, in medicine no less truly than in mechanics. The utter worthlessness of remedies hitherto known soon brought forth mercury, which, in the form of ointment, was used in a very short time after constitutional syphilis made its appearance, and before its source in the primary sore was known. What more natural, then, when the cause of the so-much-dreaded symptoms became known, than that this new remedy, which could *cure*, should be administered for the purpose of *preventing* general infection? Here arose a confusion in the history and pathology of venereal diseases, of which the world is not yet rid. Mercury was given as soon as the ulcer of genitals appeared, regardless of its character, the profession seemingly forgetting the separate histories of the two diseases, local and constitutional. Nor is this to be wondered at, since they arise from one common source—sexual intercourse—and in their early stages are much alike in appearance. To the new remedy was given the

credit of preventing symptoms which, in very many cases, never would have occurred, and, in the words of Bassereau, "this injurious, not to say barbarous practice, has been continued to the present day," though we may add it is of late being very generally abandoned.

Notwithstanding the general confusion which, as just stated, seized the minds of the profession of the sixteenth century, yet there remained some who, while ignorant of the exact distinction, still recognized a difference in the characters of the primary sores, and also observed that general symptoms did not in all cases result. In 1532, Nicolas Massa remarked that the ulcer of the genitals, which was accompanied or followed by a bubo, was not always, nor indeed often, followed by the constitutional results. Fallopius, in 1555, also recognized a difference in the primary sores; and in his writings made a distinction between them. Nicolas de Blegny, in 1673, recognized induration of the primary sore as an evidence that consecutive symptoms were likely to follow, though not believing in the existence of two distinct diseases (Bumstead).

Coming down to a later day, we find the distinction between the two sores entirely lost, and Hunter, in 1784, advocating that the "various forms of syphilis and gonorrhœa depend upon one and the same poison; that the matter and virus produced in both is of the same kind, and has the same properties," gonorrhœa being produced upon a mucous surface, and ulcers upon the skin. Notwithstanding this positive statement of Hunter, we find some expressions in his writings ("On Syphilis," American edition, p. 492) which give to the reader the impression that he at least met with symptoms which he was at a loss to account for, on his own theory of the existence of but one virus. And to him is due the credit of impressing the minds of the profession with the peculiarity of *induration*, which he regarded as always attending the true primary sore, though De Vigo, and, as we have seen, several other early writers on this subject, had long before Hunter made the same observation (Acton, p. 22). After Hunter, Abernethy saw that some venereal ulcers were not followed by constitutional effects, and here we have revived the knowledge

which the abuse of mercury had caused to be lost many years, indeed centuries, before. In 1810, in his "Surgical Observations on Diseases resembling Syphilis," Abernethy says of ulcers on genitals, "It is from their effect on the constitution alone that we can judge whether they are syphilitic or not." Again in 1814, in third edition of same work: "I have never seen the phagedenic ulcer, which suddenly sloughs, affect the constitution." Here was certainly a glimpse, and we may say the starting-point, of the duality doctrine, though the mind of this celebrated surgeon was somewhat confused, so that he failed to present a clear view, as we later have it presented by Richard Carmichael, of Dublin, whose "Essay on the Venereal Diseases which have been confounded with Syphilis" appeared in 1814, the same year in which the third edition of Abernethy's work was published. "This book," remarks De Meric, "contrasts most strongly with Abernethy's. The latter author relates what he sees, and remains perplexed; the former observes with a keen glance, seizes upon analogies and coincidences, and builds up a system. Abernethy is overcome by the multiplicity of divergent facts, and falls under their weight; Carmichael victoriously classifies his data, and creates a doctrine." Seeing no reason why the laws of syphilis should be any less unalterable than those of variola, vaccinia, or other morbid poison, the Irish surgeon directed his efforts to the task of revealing those laws; and, although his labors were not crowned with complete success, he at least made a long stride in the right direction, and was able to show that there are more than a single poison in this disease (more correctly, that there are more diseases than one); that *one poison*, which he called syphilitic, *always* produces the chancre of slow progress, and with indurated base, and that *this sore* is always followed by the train of symptoms which makes up the constitutional disease. He also observed the certainty and celerity with which these symptoms yield to mercury (De Meric).

In addition to this true syphilitic poison, Carmichael believed that there existed several other poisons, which he called "venereal," some of these poisons sometimes being followed by an eruption, which, however, could be readily cured with-

out mercury, and which even sometimes spontaneously disappeared. However much in error, as he undoubtedly was, in enumerating so many poisons, yet this distinguished surgeon clearly saw that the one truly syphilitic sore differed from all others, both in appearance, in progress, and in secondary results. For this much even is he entitled to great praise, for, until his essay appeared, no one had succeeded in giving any explanation, at all satisfactory, of the varied effects following the different ulcers of genitals, all derived from a common source, sexual intercourse, and hence very naturally supposed to be from one poison.

The exact character of the indurated chancre, with its necessary consequences, was not, however, clearly understood, until after the investigations of that prince of syphilographers, Ricord, commenced in 1830, and given to the world in 1838. Ricord observed that, whatever might be the character of the primary ulcer, from which inoculating virus was taken, an ulcer was with equal facility reproduced; and hence he was led to embrace, and ably to advocate, the doctrine of the existence of but a single poison, accounting for the great difference in effects on the system by an imagined difference in the constitution of the subject. Notwithstanding this opinion, he most clearly recognized the indurated chancre as peculiarly dangerous. He showed, too, that the action of the poison "on the lymphatic glands was an indication of its being likely to affect the constitution or not, that it almost certainly contaminated the economy, when it gave rise to an ulcer with an indurated base," attended by glandular induration (*Lancet*, 1858). The facts were here presented in a clearer and more scientific form than at any previous time, and, though not yet abandoning the unicity doctrine, yet Ricord evidently anticipated that a new poison would one day be discovered, and thus all phenomena of the disease be clearly explained and understood. "He more than once," says De Meric, "told me by the bedside, many years ago, in his hospital, 'You may rest assured that some day distinct origins will be found for the infecting and non-infecting chancres.'" In his "Letters on Syphilis," published in 1851, he remarks, "There are chancres, and perhaps these constitute the greater number, which do

not infect the system." This had doubtless been frequently observed by Ricord, as every practitioner has often himself observed it; and, though unable to explain this fact, yet, in the same "Letters," he strikes the key-note of the discovery. When commenting on the fact that in numerous inoculations performed throughout France and Italy, the inoculations of the virus of chancroids was always followed by the chancroid, while, in the inoculation of pus from a hard chancre, an indurated chancre was produced, followed by constitutional symptoms, he remarked: "If these results were constantly obtained, we must admit that there are differences in the symptoms, which have reference not only to the peculiarities of the individual upon whom the pus is implanted, but also to differences in the pus itself." Ricord long advocated the unicity of the syphilitic virus, though fully cognizant of the vast difference in the effects of different sores, simply because there was no direct evidence to prove its plurality; but here we find his eyes quickly opening to new light, as soon as new facts are presented.

It is not surprising then, after such teaching, that one of Ricord's own pupils should be the first to proclaim, and we may say at once to demonstrate, the existence of two poisons, separate and distinct in character and effects; the one local in its inception, and remaining local throughout its course; the other from its very beginning (certainly from the commencement of its induration) the evidence of a constitutional infection, the dread consequences of which no cauterization, however early, can prevent. Such is the *duality doctrine* in its whole extent and bearing; a doctrine and a discovery for the presentation of which we are chiefly indebted to Bassereau, though it was merely the plucking of the ripe fruit which had been, as we have seen, for many years growing into maturity.

However eagerly we accept new remedies, nor hesitate to put them to the test of experience, yet the mind of man is slow to embrace new truths, or theories, if you please, no less in physiology and pathology than in philosophy. Witness the history of Jenner's immortal discovery, which has brought safety to millions, and yet to-day, more than three-quarters of a century after the discovery was promulgated, we find

those who doubt the efficacy of vaccination, even among intelligent men! Witness again the scarcely less severe struggle through which the first advocates of anæsthesia had to pass, ere that great boon was accepted generally by the profession. Though certainly productive of less important results than either of these, yet the discovery which Bassereau gave to the profession in 1852 is not without great value, inasmuch as it has a direct bearing on the therapeutics of venereal diseases, and hence on the health of man. If, for example, his doctrines concerning the chancroid be true, why subject a patient to a course of mercury, and thus possibly materially injure his system, in the treatment of a disease which is merely local, and whose cure mercury can in no way hasten, if it have not the contrary effect?

Nor do we here forget that the great majority of the profession have ceased to give that remedy, even for the *hard chancre*, preferring to wait until secondary symptoms manifest themselves. Still, a large number hesitate to delay, and in certain cases prudence dictates an early resort to the mercurial treatment, from a desire to keep secret the existence of the disease, or for other reason. This treatment, however, would be not merely useless, but injurious, if the affection be indeed simply a local one. Hence the importance of making an early distinction, if any distinction exists.

To show that a difference does exist, was the object of a series of experiments and observations by Bassereau, and after him a number of other French surgeons. The same embarrassing facts were encountered in the practice of those men that the earlier writers had observed. Said Bassereau: "There can be no question of the fact that there are venereal ulcers which may be treated by the most simple remedies, without the employment of any mercury whatever, and yet never be followed by the symptoms of general syphilis. Any one may convince himself of this truth by inquiring of old men, many of whom will state that they had venereal ulcers several times in their youth, which were treated with simple cerate, lint, or other means destitute of specific action, and, though they have never taken mercurials, there has not been the slightest appearance of constitutional syphilis, during thirty or forty years

which had elapsed. Many persons will also repeatedly have ulcers and escape infection, but will finally contract another, which will be followed by a syphilitic eruption. Why this difference? What should limit the action of the sore in the one case, and in the other extend it to the whole system?" (Bumstead.) This is the important question which M. Bassereau proposed to investigate, and his conclusions I have already incidentally given. Let us now present the evidence, in addition to that from the history of these diseases, which was adduced chiefly by French observers, commencing with Bassereau:

Our author tells us that not unfrequently several patients were found in the hospital who had contracted the disease from the same woman; that sometimes a patient brings the woman from whom he has contracted an ulcer to the hospital for examination, or reports her for examination to the proper authorities. And again, families of several may sometimes be found, all suffering from the disease, received from one source, commonly the husband and father. All such cases are favorable for inquiry, and results may be reached which are just as certain as any ascertained facts in medicine. The facts elicited by the French observers, then, are to be received as trustworthy, especially as some of them can be confirmed by the almost daily observation of most practising city physicians.

The system pursued by Bassereau, and others after him, was that of confronting, as far as able, the person receiving the affection with the person conveying it. The character of each disease was thus readily detected, and, if any difference existed, the same noted. And in making the examinations the investigator was careful, by experiment and comparison, to note that age, sex, temperament, constitution, idiosyncrasy, mode of life or intercurrent disease, had no influence on the final result, other than to retard or hasten the development of symptoms, and this not materially. He also observed, lest it would be contended that successive ulcerations were necessary to produce general infection, that, of nearly two hundred cases in which secondary eruptions existed, in eighty-six cases they resulted after a single act of contagion.

But the point of greatest interest was that concerning the immutability in the specific character of the ulcerations, and

their consequent symptoms. If this immutability be established, as Bumstead remarks, the evidence is sufficient to prove a distinction of the species, the existence of two poisons.

By instituting another set of observations, Bassereau saw that, of the very many patients whom he examined, suffering from ulceration of genitals which was never followed by constitutional effects, the individuals from whom they received the poison had likewise remained free from systemic infection. If we understand him correctly, De Meric states that, in addition to the thirty-four cases of hard chancre above mentioned, Bassereau also traced forty-four more, from every one of which constitutional syphilis resulted, as was the case with those from whom the primary sore had been contracted (*Lancet*, 1858).

Not entirely satisfied with these results, and yet impressed with the force of the reasoning, and the care with which the observations had been made, several other specialists of Paris instituted similar courses of confrontations. M. Clerc observed seven cases, all confirming the correctness of his predecessors' conclusions. He was followed by Diday, Rodet, and Rollet, all surgeons in turn of the Paris venereal hospitals, and these specialists likewise report a number of confirmatory observations. Ricord, with the assistance of his internes, also repeated these investigations. The whole number of confrontations sum up nearly two hundred, and in no single case did they fail to prove the truth of Bassereau's original conclusions. In some of these cases the distinguished investigators were able to trace a hard chancre through three or four generations, in all cases the type of the sore remaining unchanged. "In one case, two friends, who shared the favors of the same woman having a true chancre, caught each of them a chancre, followed by general symptoms; and the father of one of them, an old man aged seventy-three, had connection with his son's mistress, and met with the same fate. Again, six persons were infected from the same source, and the consequences in all were identical, namely, chancres and general manifestations. So with the chancroid: in several of Fournier's cases, two, three, or four men were found together in the wards of the Hospital Du Midi, all of whom ascribed their contagion to the same woman, and in none did general

symptoms appear during several months that they were kept under observation" (Bumstead, p. 48).

To these numerous confrontations, Victor de Meric, a London surgeon, adds the record of six cases from his own practice, public and private. The first is that of a soft chancre, both man and woman—the giver and receiver—being under his observation, and general symptoms appearing in neither. The other five cases were of hard chancres, four of which occurred in married women, who had been infected by their husbands. In all of these cases constitutional symptoms followed in both the husband and wife.

We can add a mite of testimony from our own recent practice. Within the past year we had under treatment, at the same time, two patients with chancroids, the infection having been derived from the same woman. The sores appeared within three days after exposure, a single ulcer resulting in one case, and seven or eight in the other. Ten months have now passed, and in neither case has any further manifestation of disease appeared. Local treatment only was used. At the same time that these patients were under treatment, we treated a man for hard chancre of frænum, and consequent secondary lesions, who brought to us for examination the female from whom he had received the contagion. She had a hard chancre so small as to pass unnoticed by her, and it received no treatment. A few weeks later, we saw her, when she was suffering with a sore-throat, and also had a beautiful crop of psoriasis guttata, especially well marked on the arms.

Dr. H., of this city, tells us of a case of hard chancre of the lip that was communicated, in spite of his warning, by a young man to his betrothed, systemic infection following in both cases.

A strong case in point is that related by Benjamin Bell. He tells us of having been called to a case of congenital syphilis in a young child. On inquiry, he found that the father had had a chancre and secondary sore-throat. A former child died with syphilis. This one infected two nurses who suckled it, and one of these in turn infected her own child, who died from the disease. No change of type occurred in any of the series (F. J. B.'s note, p. 71, Introduction to Bumstead's Cullerier).

Here, then, are additional examples confirmatory of the observations of the French surgeons. Doubtless, did time permit, many additional confirmatory cases might be cited. Indeed, we have them in the thousands of inoculations performed in the process of "syphilization," in which the poison of the chancroid is almost universally used, and it rarely fails to "take," producing its like always, and never producing a hard chancre.

The force of this argument, then, lies in the fact that, while innumerable instances occur wherein the chancroid transmits the chancroid, and the chancre transmits the chancre, unchanged, the cases wherein a change of type is said to have occurred are, to say the least, exceedingly few and unsatisfactory. If the chancroid and the chancre depend on one and the same poison, "cases of their interchange would be of daily occurrence, and M. Cullerier"—who is a warm advocate of unity of virus, and at the head of the chief venereal hospital of Paris, a position certainly favorable for the observation of any interchange that might occur—"would not have limited himself for proof to so very few questionable instances occurring many years ago" (Note of F. J. B., Introduction to Cullerier, p. 34).

Leaving now this most weighty argument, the immutability of species, we proceed to name some points of less importance, and yet which are not without influence in determining the point in dispute. And we notice first, as confirmatory of the duality doctrine, the fact that the poison of secondary lesions has been in many cases demonstrated to be inoculable, the inoculations in no case resulting in a chancroid, but invariably in a sore essentially a true chancre, since it appears after a period of incubation, is attended by induration of base, and also of neighboring lymphatic glands, and is followed, at a later period, by secondary manifestations. Waller, of Prague, Rinecker, Vidal, and others, have performed experiments which are entirely satisfactory, establishing these points. We need but mention the fact, referring the reader for details to any recent work on venereal diseases.

Another fact in the support of dualism is "the discovery of Auzias Turenne, that simple chancre (chancroid) is transmissible to animals, while constitutional syphilis is not. Numer-

ous experiments have been instituted by him, as well as by Ricord, Langlebert, Robert and Webz, Diday, Melchior, Robert, and others, with the same unvarying result. They frequently succeeded in transplanting soft chancres upon dogs, cats, rabbits, etc., and these chancroids were reinoculable upon man. But systemic syphilis has not thus far been observed in animals" (Dr. F. Zinsser, in *Am. Jour. of Syph. and Derm.*, July, 1870). Truly this is a fact of no small importance.

Again, the chancroid is readily auto-inoculable, while the chancre is rarely so, and only under peculiar conditions, which will be noticed elsewhere. This fact leads us to infer that the former is a local, and the latter a constitutional disease.

Lastly, the chancroid, as a rule, appears on the genitals only, and the neighboring parts, being *very rarely* found upon the face or head; while the chancre is found on all parts of the person, and not at all unfrequently on the face, lips, and buccal cavity. Now, it has been repeatedly shown that the chancroid may be produced on the face by inoculation. There is, then, no idiosyncrasy against such a sore as was formerly supposed. There remains, then, but one explanation of this almost universal location of the chancroid on the genitals, viz., the chancroid is a local affection, and hence is propagated to the parts with which it comes in contact; while the chancre, being a constitutional disease, frequently arises about the face, nipples, and other exposed parts, from secondary lesions, and then transmits itself indefinitely by contact of lips and in other ways. This may be a partial repetition of a former argument, but we let it pass for what it is worth.

We have, perhaps, dwelt too long on this part of our subject, especially so since we feel confident that confirmation of our position may be found in the practice of almost every physician who makes any pretension to treat venereal diseases, if he but seek for it. "For myself," says Bumstead, "in a somewhat extended field of observation during twelve years of practice, I have never seen any interchange of the chancroid and syphilis." And with this we leave the direct proof of dualism, and proceed to that which is corroborative testimony, viz., the distinctive development and character of the two sores, the chancre and chancroid.

The peculiar character of the chancre, with the history of its development, is, as a rule, totally different from that of the chancroid. Sir Henry Thompson, as long ago as 1858, stated before the Harveian Society that, "on seeing a sore in the early stage we might, in five cases out of six, positively state to the patient at the outset a distinct prognosis as to the occurrence of secondary symptoms or the contrary, without risk of error." In what respect these sores differ, we shall attempt briefly to point out :

And, in the first place, the true chancre has a period of incubation, and the chancroid has not. After exposure to contagion, the true syphilitic poison, though deposited on some part of the genitals, does not produce a sore immediately, nor in two or three days, as we might expect it to do, but lies inactive, as it were, or rather is taken up by the system only to react and produce the ulcer which is the certain precursor, if indeed it be not the first manifestation, of the constitutional disease. Previous to the investigations of the French surgeons, it was observed that in some cases the ulcer of genitals did not appear for many days, or even weeks after the sexual act. Acton relates the case of a young surgeon who was exposed to contagion, on whose genitals two small sores appeared for the first time twelve days afterward, which developed into hard chancres, and were followed by secondary symptoms. Langston Parker, while holding that the primary sore, as a rule, appears in from four to eight days after exposure, yet has "known a month to elapse in one case, and three months in another." Durkee gives five or six days as the average period of incubation, recognizing no difference in the two poisons; but he states that this period varies from twenty-four hours to ninety days. Hunter "had one case where the period of incubation was seven weeks." Mr. Lawrence relates an instance of five weeks. Such were the observations of non-believers in dualism, but they attempt no explanation of the fact that, while some sores appeared immediately, i. e., within a day or two after exposure, others did not appear for several weeks. Later writers state the same facts. Bumstead relates the case of one patient in whom the poison remained at rest for thirty-five days; another in whom the sore appeared on the sixteenth

day, etc. "In a series of twenty-six cases of experimental inoculation collected by Rollet, in 1865, and comprising all that were known up to that time, there was not one in which a marked interval did not exist between the insertion of the virus and the appearance of the subsequent sore. The maximum period of incubation was forty-two days, the minimum ten days, and the average between twenty-five and twenty-six days" (F. J. B.'s Note, p. 212, Cullerier's Atlas). These were all hard chancres. We all know, both from observation of the natural course of the soft sore, and experimental inoculation, that the chancroid appears in two or three days after the implantation of the virus. By accepting the doctrine of a duality of poison, we are not at a loss to account for this difference, each disease having its own laws just as scarlatina and variola have.

But why, we may be asked, so great a difference in the length of the period of rest of even the *true chancre-poison?* Here is a difference of nearly three weeks in the cases from Bumstead, and even greater than that has been observed. This period does certainly differ as much as several weeks, but does not a difference also occur in the incubation of many other diseases? Of a certain number of persons exposed to the infection of variola, rubeola, or typhoid fever, perhaps in no two would the symptoms of the disease present at the same time. Again, it would be just as reasonable to require us to explain why it is that the manifestation of secondary symptoms occurs in some cases in as short a time as three or four weeks after the appearance of the chancre, while in others it is delayed for at least as many months. When the difference in the incubation period of hydrophobia, which is so much greater than that of this disease, is explained, perhaps we may have further light on this subject. For the present, let the fact suffice that the *chancre* has a period of incubation, rarely so short as ten days, and not commonly longer than three weeks; while the *chancroid* almost invariably appears in two or three days after exposure.

Again, the two sores differ in their mode of development. "The *infecting sore* commences as a papule, pimple, or abrasion . . . around which a specific growth of tissue takes

place, a *sclerosis*, or induration (Aitkin). "A pustule is no essential part of the process, nor is suppuration," though the latter may be readily induced by irritation.

The *chancroid*, on the other hand, commences as a pustule, or, if there be a crack or abrasion, as is frequently the case, an ulcer presents itself from the first, and in any case pus is always present.

Thirdly.—The *hard chancre* is generally single, or, if multiple, seldom more than two are present, and these appear simultaneously. No reinoculation occurs. Of 170 cases of secondary eruptions whose history Bassereau traced, in 141 cases but one sore had existed.

The *chancroid* is in almost every case multiple, and an increase in the number of sores is very liable to occur, from the pus coming in contact with the neighboring parts.

Fourthly.—When fully developed, the *chancre* is generally superficial, sometimes even slightly elevated, and of a red and shiny appearance; or, if depressed, not much nor abruptly so, but with gently-sloping edges, and is often grayish at the centre. This sore has an indurated base, and is quite movable on the tissues beneath. The boundaries of the induration are clearly defined, giving to the sore the proverbial likeness of a "split pea." It is well described by Sir Henry Thompson as resembling "a cup of cartilage let into, or set upon, the tissues beneath." The secretion is scanty, and rather serous than purulent. The *chancroid* is irregularly roundish in shape, with edges ragged and deeply-cut, its bottom being also uneven, and of "worm-eaten" appearance, and always covered by an abundant grayish secretion, purulent in character. No induration of base, unless caustics have been applied, and then the induration is not well defined, but shades off into the surrounding tissues.

Fifthly.—The lymphatic glands of one or both groins, during the existence of a *chancre* on some part of the genitals, become indurated, but are almost invariably painless, and free from suppuration, the exception being after great exercise, or other irritation.

When a *chancroid* is present, the inguinal glands not infrequently become enlarged, but are generally painful and

tender, and suppuration is not at all rare, unless care be taken to prevent it. Among hospital patients open buboes are quite common, in connection with the chancroid.

We have thus briefly given the chief characteristics of the *chancre* and *chancroid*, though not claiming that in all cases they are so plainly marked as here represented; and especially in the female patient, we are told, do the sores assume more of a similarity.[1] However, the differences are sufficiently well marked to serve, at least in some measure, as testimony corroborative to that already adduced to prove the existence of two chancrous poisons.

Lest we be misunderstood, it may not be amiss for us to remark here, that we do not claim *induration* as a never-failing symptom of the infecting chancre. Indeed, the terms *hard* and *soft*, as applied to venereal sores, should be entirely dropped, for they only serve to mislead. The *chancroid never* infects; the *chancroid never* becomes *indurated*, in the proper sense of that term. The *chancre always* infects; but the *chancre* may remain non-indurated, at least for some time after its first appearance. Dr. T. B. Crosby, in the Oration before the Hunterian Society, 1871, said: "There is a form of soft, suppurating, and apparently non-infecting sore, which is liable to assume, during its progress, the character of induration." Frederick C. Skey (*Lancet*) remarks that the syphilitic poison involving the constitution "is not necessarily the product of the hard sore, though generally so. . . . A sore primarily destitute of hardness may, like the sore primarily hard, involve the constitution." Here arises a difficulty in diagnosis, "because we have not arrived at such precision of knowledge as enables us to distinguish the soft sore that accomplishes its full career without involving the constitution, and that other soft sore which becomes more or less hard during its progress, and which almost inevitably leads to secondary disease." While these facts should render us guarded in our prognosis, and careful to learn as nearly as

[1] The commonly-received opinion, that the chancre seldom becomes indurated in the female, is forcibly combated by Fournier, in a clinical lecture translated into the *American Journal of Syphilography and Dermatology* for July and October, 1870.

possible the true history of these cases, it should certainly not lessen our faith in the duality doctrine. Fournier most ably answers the argument which unicists have attempted to frame on this point. He remarks: "Analogy and common-sense teach us that induration, as a symptom of the chancre, may be wanting, just as any sign may be wanting in any disease, without the chancre being thereby modified in its nature and essence. In truth, it is not the induration that constitutes the chancre, any more than it is the crepitation that constitutes the fracture. The induration does not give to the chancre its syphilitic quality; it is the syphilitic essence of the chancre which endows it with its characteristic induration. In a word, the chancre is not syphilitic because it is indurated, but, on the contrary, it is indurated because it is syphilitic; and it is syphilitic without induration, even as it may lack any other of its constant symptoms. . . . By general admission, then, the induration of chancres may be wanting in certain cases" (*American Journal of Syphilography and Dermatology*, October, 1870).

The views here presented have of course met with no little opposition; and even at the present day, nearly twenty years after their first clear presentation, there are a number of the profession who do not accept the duality doctrine. Perhaps considerable of the opposition, as suggested by one of our authors, is found among those who have been reared in another school, and are slow to yield their early convictions. "Many men still pin their faith to the older doctrines of Ricord, although they have been abandoned by their author himself."[1] The opposition, however, is based, not so much upon direct proof that is offered by the unicists, but rather upon a doubt as to the sufficiency of the testimony presented by the dualists, and upon our inability in all cases to make a correct diagnosis in the early stage of the diseases. Some of

[1] "The two kinds of chancre are very evidently dependent upon two different kinds of virus. They belong to different diseases. The simple chancre (chancroid) is absolutely foreign to syphilis, and is entirely distinct from it. After prolonged observation, I am now fully convinced of this fact, and I authorize you to say so in my name." (*Editor's Preface of Bumstead's Cullerier.*)

the objections to dualism we have already noticed. They are few and weak. Even the ablest advocates, and those in positions which give every facility for observation, have failed to make out a case sufficiently strong to turn the tide in the current of professional opinion which has for years been drifting toward the new doctrines. One important point remains to be considered, and that is, the theory which was presented by M. Clerc, in 1854, viz., that the chancroid is merely a modification of the chancre, being the result of the implantation of the virus of true chancre upon the person of one already laboring under the constitutional disease, the intensity of the poison being thus diminished. It is well known that, when a person is suffering with constitutional syphilis, it is with great difficulty, and only in rare cases, that the virus of the chancre can be made to "take." Mr. Henry Lee, in numerous experiments made in 1856, failed entirely, except when artificial irritation of the sore from which the pus was taken was resorted to. The same stimulation of the sore is resorted to now, when the virus of the chancre, instead of that of the chancroid, is used in the process of syphilization. Even with this preparation of the virus, the inoculations do not always succeed. When successful, however, "a pustule is developed without incubation, in the course of forty-eight hours. There is no induration of its base, or of the neighboring lymphatic ganglia; the secretion is reinoculable, and, in short, the phenomena are the same as if chancroidal matter had been used" (Bumstead in *American Journal of Medical Science*, July, 1870). To the same effect are the experiments of Bidenkap and Kobner, to the results of which so much importance is attached by the opponents of dualism. The result of his nine experiments, made with the lancet upon the bearers, Bidenkap condenses as follows: 1. Inoculation of indurated infecting chancre upon the bearer seldom took immediately; more generally did not take, or gave rise only to abortive pustules.

2. If by external irritation the ulcers had been caused to suppurate more profusely, the inoculations produced pustules in the majority of cases.[1]

3. These pustules could be propagated in continuous series, which, according to Bidenkap, proves that they were soft chancres. Kobner's experiments were more carefully conducted, pus of different degrees of dilution being used, and they are therefore even more interesting, though only confirmatory of Bidenkap's observations.[1]

After these experiments, then, it can no longer be doubted that the true infecting chancre can sometimes, though rarely and with difficulty, be auto-inoculated, and that the result is a sore exactly resembling in appearance the chancroid. Here, then, would seem to be a confirmation of M. Clerc's theory, but is it really so?

We might content ourselves with calling attention to the fact, as shown by Barensprung and others, in answer to the conclusions of Bidenkap, that "in syphilitic persons auto-inoculable ulcers could be produced with ordinary pus, as, for instance, that of the pustules of scabies . . . provided the pus was concentrated by irritation" (*American Journal of Syphilography and Dermatology*, July, 1870, p. 236). He might also again revert to the history of the chancroid and syphilis, where we have seen that the former existed for centuries before we have any account of the appearance of the latter, and hence the chancroid could not have been derived from the constitutional and more recent disease.

More direct proof, however, may be required to combat the theory of Clerc, and the recent apparently confirmatory experiments. The theory is worth little, it seems to us, until it has been shown that these auto-inoculable ulcers, produced on the syphilitic patient from the chancre, are capable of producing the chancroid when transferred to the person of one free from disease. As far as our observation goes, this has not been done. On the contrary, a number of cases are on record wherein the *true infecting chancre*, followed by secondary symptoms, has been produced from these soft sores on syphilitic patients.

[1] The conclusions at which Kobner arrived, viz., "that the soft chancre is an acute inflammatory manifestation of syphilitic contagion, while the constitutional form represents a modification of the same with a milder and more chronic character," seem so far-fetched as to require no serious consideration.

Granting that our evidence on this point is insufficient; granting even that this soft chancre on the person of a syphilitic patient will produce a soft chancre, unattended by constitutional manifestations, when transferred to an innocent person, yet we cannot do other than accept the duality doctrine; for if the effects of the chancre and the chancroid on the system be ever different, the one local, the other systemic, no interchange of species ever occurring, what does it matter clinically, if the chancroid *is* a derivative of syphilis? Until these points admitted be proved, however, it will not be necessary to ask this question; and, until they be proved, the duality doctrine will continue to have a host of supporters.

ART. V.—*Muscle-grafting; its Elucidation of the Physiological Action in the Cicatrization induced by Skin-grafting.* By BENJAMIN HOWARD, M. D., late Professor of Clinical and Operative Surgery, and Surgeon to the Long Island College Hospital, New York.

THE wide-spread and uniform success of the newly-presented treatment by skin-grafting has aroused very extensive inquiry and great variety of experiment.

These investigations, conducted simultaneously by so many eminent authorities, have made us wiser in the steps of the operation, but concerning the principle upon which the cure is effected it has not been claimed that they have taught us any thing.

On the following points, to which these investigations have been chiefly directed, it is interesting to observe—

1. *The Different Procedures which have obtained respecting the Size and Quality of the Graft.*

Reverdin's paper, the first he published in December, 1869, on "Epidermic Grafting," indicates by its title the limitation which he contemplated in the quality and size of his grafts. Mr. Pollock, who quickly followed him, used grafts also about the size of an oat or millet-seed. Prof. F. H. Hamilton, the pioneer of this method, at least in New York, who

in 1847 transplanted a large piece of skin for the cure of a granulating surface, has since followed Reverdin and Pollock in the use of grafts, more commonly of the same size as they employed. I have assisted him, however, when he has used a graft larger than a three-cent coin. Mr. Dobson has used the "minutest subdivisions." . . . Mr. Steel has used grafts the size of a pea; of a fourpenny piece; and has contemplated making them as large as an English penny. Mr. Paige, of Edinburgh, has preferred them a quarter of an inch in diameter. As far as my own limited experience goes, the grafts not smaller than the flat surface of a split pea have seemed to have a greater and more progressive vitality, and so to be less liable to the sloughing of the epithelial surface so frequently observed after a few days in those of smaller size.

2. *The Effect of the Graft upon the Contiguous Margins of the Ulcer.*

Mr. Steel has remarked the rapidity with which healing from the margins of the ulcer proceeds as soon as cicatrization of the graft establishes itself. The same fact was remarked also quite early by Mr. Couper, but this he regarded only as a remarkable coincidence.

The progress of the edges toward the graft has ceased to be remarkable now, except as being inexplicable, for, of all the phenomena connected with this method of treatment, there is perhaps not one more commonly witnessed.

From these contiguous points not unfrequently cicatricial tissue is projected toward the graft as toward a central pier, until a bridge of moderate width partially or completely spans the granulating surface. I have noticed, too, in some instances, that this process started by the cicatrization of the graft will sometimes continue to make considerable progress, even after the graft has sloughed and totally disappeared; that, moreover, almost the entire area of an ulcer may become covered by centripetal cicatrization, before the grafts, or germs so called, have sensibly germinated at all. Skin-grafts alone having so far been used, it is not surprising that, whatever difference may exist on other points, not only the authorities above quoted, but all others, as far as I know, seem to agree in this, that—

3. *Epithelial Cells in the Graft are an Essential Element of Success (?).*

Mr. Steel says, "It is evident all that is essential is the papillary layer of cutis, no matter how small, capable of developing cuticle."—(*British Medical Journal*, December 10, 1870, p. 621.) Against this view I believe no objection has been raised, nor for it has any explanation been offered. It is not strange that so great effect from such little cause has evoked so much wondering admiration.

Accepting this statement as covering the whole ground, however, then the "papillary layer," or epithelial cell, in the graft, acts both where it is not, and in a manner which is specific, upon the contiguous margins of the wound, inducing the effect manifestly produced upon them by the grafts used. To aid in determining the correctness of this view I conceived the experiment of using a graft of which epithelium could form no part.

As these experiments seem to have excited some little attention on the other side of the water, it may be of interest to present a more complete account of them—helping, as I think they do, to elucidate the theory of the physiological action of skin-grafts.

Case I.—Major K. came to me about the middle of February, 1871, on his return from Europe, where he had been under treatment for a large wound of the left leg. In July, 1863, while leading his command at Gettysburg, a cannon-ball, passing through his horse, carried away the major's calf to the bones. The resulting wound had been ever since under treatment, and had been reduced at last to about four inches in length by about an inch in width. At first I used skin-grafts, which for a time had an excellent effect upon the callous edges, but again they halted, causing me to propose a repetition of skin-grafting. The major, sharing my enthusiasm on the subject, consented to any other experiment of the kind I might desire, and so I proceeded as follows: Three cleanly-cut excavations were made, about equidistant, in the base of the ulcer, large enough to receive respectively the first, a flax-seed; the second, a barley-corn; and the third, a pea.

The bleeding having ceased, my friend Dr. Hinton pinched up the skin over the belly of the biceps of the patient's right arm, transfixed it, cut outward, turned up the triangular flap, and, seizing with bull-dog forceps the cleanly-exposed muscle beneath, exsected a piece of it more than a quarter of an inch square. This was divided into three pieces, corresponding to the sizes of the excavations, and they were then deposited respectively so that their surfaces were level with the base of the ulcer. They were then strapped over with isinglass-plaster, and treated in the same manner as skin-grafts. The next day the grafts were so firmly united that neither of them could be detached with the point of a scalpel.

On the second day the pale surface of the ulcer had become so vascular as to vie with the florid muscle-grafts. To my surprise, this quickening was shared also by a distant part of the original wound, separated from the main body and the muscle-grafts, by a wide bridge of cicatricial tissue. The margins of the wound were equally improved, and made such progress, that the patient insisted he could see a new advance every day. This centripetal cicatrization proceeded most rapidly from a point nearest to the largest muscle-graft, over and beyond which new skin was quickly thrown, the site of the graft being afterward marked by a circular elevation in the newly-formed promontory. The other grafts acted with less vigor; the second in size was reached and covered with skin by approaches from the margin in about eighteen days. The smallest became too luxuriant, remained elevated above the surface, and was the last point to become completely cicatrized.

I thought it possible that the previous use of skin-grafts in the major's case might in some way modify the result. I therefore obtained the consent of another of my patients to the same operation upon an extensive burn for which I had then been treating him for more than three months. The wound on the arm of Mr. L. was still about four or five inches long by about two inches in width, and covered with very prominent but pale granulations, which overhung the edges. The treatment by pressure had previously been suspended, the patient having complained of the pain it caused him.

With the assistance of my friends Dr. Hinton and Mr. Goodrich, I proceeded just as in the former case, inserting three muscle-grafts from the biceps of the opposite arm about equidistant from each other in the wound. The next day they were all adherent, two firmly, the third loosely. This was not surprising, as it was difficult to make clean-cut beds for them in granulations so prominent and flabby. The third muscle-graft gradually disintegrated, and by the third day was completely discharged. The others remained healthy and permanent.

The first day after the operation the granulations assumed a brighter appearance, those overlapping the edges of the wound after the second day began to subside, when simultaneously the edges became typical in shape and color, and crept forward at a pleasing rate. After the first week I was prevented again seeing the case for ten days, when I found the patient had voluntarily discontinued the dressings two days before; a narrow, hard scab was all that remained. These facts plainly show *that neither the increased vascularity of the surface of the wound, nor the centripetal cicatrization induced by the skin-graft, is in any way due to the epithelium in the graft.*

On the principle of "*ubi imitatio ibi fluxus*," I have thought that the infliction of a burn or of a vaccine pustula in the centre of an indolent ulcer might be beneficial, and for several years past I have been in the habit of tattooing the edges and base of certain indolent ulcers with incisions of about a quarter of an inch in length, and have found both the irritation from the woundings, and the process of their healing, to be very effective stimulants. When, in addition to the incisions, union by adhesion of the base with tissue of a higher vitality is set up, as in muscle-grafting, the graft becomes a centre of new life, compelling an increased capillary supply to converge for its own sustenance. In accordance with this, I have observed that the accelerated growth of the edges and granulation of the base has been the greatest where the contiguous graft was the largest.

It will of course be understood that, for several cogent

reasons, it could but be unwise to propose muscle-grafting as a substitute for skin-grafting. Besides the greater ease with which one can obtain the skin-graft, it may act not only as does the muscle-graft, but also by its germination, as the muscle-graft cannot; the centrifugal and the centripetal extension of new skin both combining to complete the cure.

Clinical Records from Private and Hospital Practice.

I.—*A Case of Epileptic Mania.* By Frank A. Ramsey, M. D., Knoxville, Tennessee.

James H. Proffit, aged twenty-five; a sober, energetic, and capable blacksmith, is at work in the machine-shop of the railroad in which he served his apprenticeship, and has since been all the time employed. He is six feet high, weighs one hundred and eighty pounds, and is admirably well developed in muscle; eyes black; hearing unimpaired. He has no particular feature presenting any thing peculiar, unless, perhaps, it is more than ordinarily protuberant eyeballs, which his sister says "have got larger and sharper than they were," and a thinness of the upper lip, naturally inordinately thick, which is drawn tightly against the teeth, and retracted toward the nose when he laughs or talks. His general health has always been good, except that during childhood and boyhood he had sick-headache, for which he was always successfully treated, during attacks, by his mother binding up his head with brown paper steeped in vinegar, and giving him herb-teas.

Some time during the year 1862, when he was about sixteen years old, while assisting in unloading a car of wood, and when in a stooping position, he received upon the right side of the head a blow made with a billet a very few inches in diameter, and between two and three feet long, having the force that was given to it to throw it from the car to the distance of a few feet. Immediately upon receiving the blow he was insensible, but perfectly recovered within thirty-six hours, keeping in bed for that length of time. Insensibility was not observed to occur to him at any time subsequently for several

years. But during these years headache was occasionally present, and with sufficient severity to make him quit work, and lose sometimes half a day, rarely as much as a whole day. The attack was ordinarily sudden; frequently came on during the night-time, and he would be well enough by morning to go to work. Under all circumstances he would be relieved, and speedily got well after vomiting freely.

In the third or fourth month of the year 1867 he received a blow on the left side of the head, from a descending sledge-hammer weighing fifteen pounds, swung by a striker at the anvil, who failed to heed the sound which had been made, and indicating that he must cease to strike. Proffit saved himself from falling by catching hold of something. The stunning effect upon him for the moment was so slight as to be hardly observed. He continued his work at the anvil and the forge; and for several months afterward he was wholly free from difficulty of any kind, except violent attacks of headache, referred to the left supra-orbital and frontal regions. His family say that these headaches differed from those to which he had been accustomed before he received the blow. He says: "The headaches I had when I was a boy were the whispering wind, when compared with the headaches I have since I was hurt—they are the furious tornado."

He now has the peculiar vacant stare common to blind men; though it is evident that he can see, for he will look at the clock on the mantel-piece, and tell the time of day, but, strange to say, will turn to walk, and stumble over a chair or table that may be in his way. This sight-failure is said by a fellow-workman, and some of the members of his family, to have been the first observed of any ailment, or departure from health, except the occasional attacks of what is called by himself, and all his kin, headache. The sight-failure was noticed in the manner of his walk at the time of and before complaining of pain in the head, and in the manner in which he handled tools, iron, etc.

The first observed insensibility occurred about a year after he had received the sledge-hammer (or the second) blow. During an evening visit to the lady who is now his wife, he complained of headache, became silent, soon looked vacant, and

did not reply when spoken to by her in alarm. After a few moments he rose from his chair, staring, and walked, seemingly without purpose, partly fell, but caught by or was caught against a bureau, then, after moving a step or two, fell across a table, and then, apparently suddenly, came to himself, and answered her anxious questioning—"What's the matter with you? Is it possible that you have been drinking?" "No," he said, "I have the headache, and I came very near fainting." The young lady's mother just then entered the room, and noticed that his face was not pale, but was very red. Some months afterward—but not until he had been permitted "to burn up considerable iron," so loath was the foreman of the shop to be without the labor of this workman, whose eyesight occasionally, and with increasing frequency, did not serve him in discerning "the heat his iron had"—he was dismissed from the shop because of sickness.

For a while the intervals between attacks were several weeks, perhaps two months, but became progressively shorter, until now there is no discernible interval.

Formerly, the earliest precursory evidence of a seizure was inordinate appetite. From moderate eating at regular meal-hours, he would at each meal eat enormously, and, "to prevent craving, took meat and bread with him to the shop, to be taken between-times." The sight-deficiency supervened, getting more and more decided, until pain was complained of, and soon his head would be gradually but forcibly drawn back, and, if not prevented, he would fall, and become stiff, the whole muscular system partaking of the rigidity. There has never been observed any alteration of rigidity and relaxation, or any frothing or bleeding at the mouth. He was uniformly unconscious during a portion of the time, and usually fell asleep soon after the rigidity passed off, and slept so very deeply as to be aroused with difficulty, and for a short time after fully awake he was delirious. An interval of more or less duration, during which his physical and mental health seemed perfect, would be followed by a repetition of the manifestations which have been given. The intervals have disappeared, and now he is almost always raving, if not in very profound sleep, though he can at any time be, for a little while, engaged in

giving a rational reply to a question. His memory of recent occurrences or remarks is almost wholly destroyed, though it does not appear to be at all deficient in regard to persons, things or circumstances of which he was cognizant long ago. He recognized me, though he had not seen me (and I had changed much within the time) for ten years. Thus far he has not been vicious or dangerous in his madness; in his raving he is incoherent, not in language, but in ideas, at the same time deeply pious and excessively vulgar, singing psalms and hymns and obscene songs, interspersing lines of the spiritual and refined emotional, and of the vulgar sensual songs; now vain, and quickly humble, as manifested in the tone of his voice, and in the positions he takes, as in this, by way of illustration: body erect, chest expanded, head thrown slightly back, face radiant, smiling, arm gradually extending, voice progressively but slowly rising to a high note reached on the word Judah—"I am the lion of the tribe of Judah"—when, without disconnection, or discontinuance of language, his arm dropped upon his thigh, his body bent slightly forward, his head slowly fell until his chin almost touched his chest, the smile left him, and his countenance underwent an entire change, while his voice lowered, until at the close of the sentence it was very near a whisper—"by descent from Abraham through the issue of Hagar the bondwoman." Then, after a moment seemingly employed in reflection, he cried out, "That's what's the matter," "All right," and broke into singing and vociferous speaking, with gesticulations.

He sleeps from 10 P. M. to 4 A. M., and awakes in delirium. When asleep, is not easily disturbed. Heart-sounds normal, pulsation 72, and, without the watch, conveys the sensation of slowness—the strokes are long. Temperature has not been taken. No physical or rational signs or symptoms of pulmonary involvement. Urine passed easily, and in abundance, though very red; it has not been observed with the microscope or chemically. Bowels moved regularly and naturally once every day. Pupil of the eye contracts and dilates under light and its absence; there is no observable paralysis.

The patient was seen by Dr. James C. McIntosh and myself on the 14th of March, and has been occasionally seen by

one or the other of us until to-day (the 25th of March), and the history of the case, obtained by diligent inquiry, is embraced as given here.

Under the influence of bromide potass., grs. xxx., and hydrate of chloral, grs. xv., given when he is very boisterous, and grs. xxx. of the bromide, gtts. xx. of fluid-extract of can. indic., given regularly, morning, noon, and night, the intensity of the exhibitions of mania is very much modified; and though talkative, with incoherency of ideas, he is more quiet for periods of greater length; but any relaxation in the administration of the bromide and hemp is very soon followed by more intense exhibitions of mania. His father says, "That's a noble medicine."

It is not proper, perhaps, for one seeking assistance, to affirm the views he may entertain relative to the subject that he desires to have more clearly elucidated. But it can hardly be amiss to assert that authoritative observations establish the prevalence of epilepsy without any alternation of rigidity and relaxation of muscle, and that the tongue-protruding, bloody frothing, convulsive tossing, universally esteemed to be essentially epilepsy, are but excessive though common manifestations. *Petit mal* is recognized without the occurrence of rigidity; and the peculiarity of loss of consciousness and muscular rigidity presenting together is but another form, may be a step in advance, of *petit mal*, or simple momentary forgetfulness, or temporary utter self-abnegation, and a step this side of *grand mal*, or the convulsive horrors of frightful and frightening epilepsy. Indeed, variety of manifestation appertains to epilepsy. I have frequently seen a subject who went freely about town and country for years, and every day had one or more attacks, evidenced in the singular phenomena of a sudden stop, and look for a moment as if in deep reflection, a shrill, hideously-penetrating shriek, a clapping of the right hand to the forehead, which it would rapidly strike, while the body gradually bent forward, until his head almost touched the ground, his left foot all the time patting the ground, in unison with the movements of the right hand against the forehead. This position was kept for but a moment, then the body would very gradually become erect, and

as it rose the movements of the hand and foot became less rapid until the foot was still and the hand lightly rubbed the forehead, the arm suddenly dropped, and he would look round as though amazed—and then walk on as if nothing had occurred. This man has very recently been sent to the State Asylum for the Insane. During the summer of last year I witnessed a similar exhibition by another person, on a street in the city of Memphis. Many years ago, Dr. G. E. Paget communicated a case of convulsive disease to a London medical journal, in which the peculiar symptom exhibited by the patient was the tendency to fall forward on his face; but, in his very close description of the case in its whole, clonic spasm is as clearly a peculiarly well-marked feature as is unconsciousness at times, and profound sleep, and ultimately persistent unconsciousness with intercurring tonic spasm, general stiffening. Paget ascribed the essential condition to diseased action in the crura cerebri, the result of which was "exhibited in a diseased mass, not homogeneous; the greater part of it of yellow color, and very firm consistence, and tough as well as firm; the other part of a dull, grayish-red color, and as soft as the gray substance of the brain; the whole of the mass about an inch long and half an inch in breadth and thickness, deeply seated, and occupying in both crura the position of the locus niger, and encroaching on the nervous fibrils around it. There were other morbid appearances in the brain, but none that had any thing distinctive; they were all such as are commonly seen at the fatal termination of chronic cerebral disease, whatsoever the symptoms may have been during life." But, the reports of cases, lectures, and monographs, give so many different kinds of manifestations as to justify the assertion that variety appertains to epilepsy.

In all cases of epilepsy it is very probable that in the beginning the manifestations are evanescent and only sensational, perceived alone by the subject; and as the condition from which these are caused persists, or becomes more positive or more profound, the manifestations become more obvious—momentary loss of consciousness occurs, perhaps nothing more; or loss of consciousness with muscular rigidity, and profound sleep, or alternation of rigidity and relaxation, mania, paraly-

sis, dementia, sometimes one and another in different positions in succession, sometimes all together.

The instance of disease under consideration is, then, regarded as one of gradual, progressive development, until now it presents as epileptic mania. The essential condition is one, evidently, that has been superinduced by some influence not belonging to the economy that is so seriously disturbed. Uræmic poisoning cannot be considered as exerting any causative influence, for the profound sleep, even approaching to coma, has been a feature from the first observed attack of loss of consciousness, now four years ago. And the attacks cannot properly be ascribed to the condition of the stomach; the perfect development of muscle, the continued preservation of *embonpoint*, and the regularity of intestinal movement, ignore the causative agency of indigestion; while the voracious appetite does seem to be but the first in the series which as a whole clearly show the fearful involvement of the nervous system; and, so far as inquiry has elicited facts, the influence causing the progressive or continued perturbation of the nervous system was a blow from a sledge-hammer weighing fifteen pounds, swung with some force—sufficient to make the hammer describe a circle, and give it impetus as it descended a segment of that circle. So much weight and so much force must have made concussion when the hammer and skull came together; but there were no immediate evidences of contusion of the brain.

Is the essential condition one of malformation and maladaptation of the molecules of brain-matter resulting from, consisting in the successive changes, that had beginning in the concussion effected by the fall of the sledge-hammer on the skull? The word *concussion* is used here in the simple sense given to it in English dictionaries, a shaking, a jar, and without any conditions. By concussion of the brain is meant no more or less than that the brain has received a jar; the molecules of which it as a whole is constituted have been suddenly disturbed in their relationship to each other. This disturbance in relationship of molecules may be transiently evidenced at the moment, and no obvious manifestations afterward occur; or, it may be transiently evidenced, and sooner or later, at no

definite period, ordinarily within a month or six weeks afterward, manifestation more or less grave, always serious, will be observed. From the moment the jar, the concussion, was received by the brain, the disturbance in the relationships of the molecules of matter has been getting more and more profound, action of some kind has been going on, and producing effects all unseen in the bone-encasement, within which changes are momentarily occurring, and progressively extending from molecule to molecule, and from tissue to tissue. No rule has been, or can be, established to govern the rapidity of action, and of changes, and of degree of tissual involvement, and of time where will be exhibited, and manner of exhibition of manifestations that the action and effects occasion. In general practice in the smaller cities and in the country, the medicine careful of his own reputation, and the interests of the patient who has received the blow, describes various indications to be closely watched for from the fourth to the eighth week after the transient exhibitions of concussion have passed off. The indications for the most part are physical languor, mental torpor, inappetency or inordinate hunger, inclination to sleep, and in some manner involvement of kidney-action. Mr. Abernethy had remembrance of a man who had a very horrible concussion, who went out of the hospital quite well; but a student was asked to watch him, and subsequently it was observed that the man squinted, Mr. Abernethy says a secondary occurrence; but was it not in truth an evidence of a change that had occurred in the succession of changes constantly taking place during the action that had begun in, and continued from, the moment the jar was received? No mention is made of the time that intervened from the blow to the appearance of the squinting. There are various consecutive effects, and the language of Copland is pertinent here, as applicable to any and all of them: "Abscess of the brain is very often a consequence of external violence; but it is one which takes place at extremely indefinite periods from the receipt of the injury, and which often has little or no relation to the extent of the external mischief. The period which elapses from the external violence to that of full development of the abscess, varies from two or three months to as many years. A case

which I had an opportunity of observing, in which the operation of trephining had been performed, presented a large abscess in the hemisphere, underneath the seat of injury, between three and four years from the time at which it had been sustained."

This may occur, as is true of gangrene, and other conditions consequent upon external violence, following upon an injury that occasioned at first only a disturbance of the relationships of the brain-molecules—a condition that cannot be discovered by *post-mortem* examination, if death is produced at the moment by heart-rupture, or some lesion sufficient to produce death. Very frequently, concurrently with the reception of concussion, there is contusion of the brain, which is recognized in its mildest degree, or simplest *post-mortem* appearance, in specks of extravasated blood on the surface, as well as deep in the structure of the brain, according to the extent of the contusion. We are informed by Prescott Hewett that this appearance was detected and first described in 1829 by M. Chassaignac, as the lesion of concussion; but it is evidently more —it is at least rupture of nervous fibres, if rupture of the vessels is not necessarily an element. And in such cases, too, if death does not occur, action continues and successive changes occur, at indefinite periods, and with similar manifestations as has already been referred to as following upon concussion simply. Twenty-five years ago, I was called to make examination of a man who had died the night before. He was about thirty-five years of age, and had used liquor excessively all his life. Eighteen months before his death, he was hit with a seasoned hickory-stick, an inch in diameter, with sufficient force to splinter the wood. The skin was broken, and a splinter from the stick entered at a point a little behind the left temple, and was so driven as to make its extraction necessary from a point a little above the left eyebrow. The health of the man had been variable, but I could learn nothing definite, except a frequent complaint of headache, and the fact that he was never put to bed because of sickness, until about three weeks before his death, at which time he had a convulsion—a shriek, insensibility, bloody-foaming mouth, head turned one side, eyes turned up and wide open. He had them at intervals, growing

rapidly shorter, until, finally, after passing from one into another, almost continuously, he died. The scalp was turned down, and careful inspection failed to discover any marks upon the external table, of any injury having been received on the part of bone on which the force of the blow was spent. But, on raising the skull-cap, the membranes of the brain were so firmly attached to the internal table of the left temporal bone as to require the application of the knife to free them. All round, for the space of an inch, the surface of the internal table was red, and on scraping it radii were very perceptible in the substance of the bone, clearly exhibiting marks of a previous fracture. The left hemisphere of the brain was soft, almost fluid, and preserved of itself no form. It looked like pus, but, as I was then unacquainted with the use of the microscope, I cannot now tell with the precision that is required by expert pathologists of this day, what it was that I observed, where naturally the left hemisphere ought to have been found. The man who had given him the blow wanted to know how far his agency had contributed to death in this instance. Of course I could give him no other reply than that the blow had materially influenced the succession of changes that terminated in the appearance of the left side of the brain, and under the point where the blow was received on the skull, and as was revealed after death. "It is extremely important to be aware of the facts—that the most violent symptoms referable to the brain often exist during life; and yet, on the most careful examination after death, either no appreciable lesion, or none sufficient to account for the phenomenon, can be detected; while, on the other hand, many and most important changes are frequently discovered in both the brain and its membranes, in cases which betrayed either no cerebral disorder, or none calculated to excite suspicion during life of any organic change; and the same appearances are observed after death occurring upon manifestations wholly different, as well as different appearances after death occurring upon manifestations essentially alike during life."

Mr. Guthrie had a case presenting some points which makes reference to it here very appropriate. A stout, healthy girl, twenty-three years old, received a blow on the left temporo-pa-

rietal region from a stone with an estimated force of sixteen pounds. The immediate effect was insensibility; it is not recorded how long it continued. But on recovery she had acute fixed pain of the head that continued for two years. A week after she had the blow, she began to lose the power of moving the right arm, without, however, any loss of sensation or any disturbance of the cerebral functions, and was treated without effect, and continuously for twelve months, in several hospitals in London. After eleven months without hospital observation she was again admitted, with the right arm and leg quite paralytic; the arm, which had previously been flaccid, having now become remarkably rigid, its temperature below that of the opposite arm; vision, particularly of the left eye, imperfect, the pupils, however, acting naturally; hearing on the left side affected; memory bad; and unusual tendency to sleep. All ordinary remedies having failed to relieve her, Mr. Guthrie removed a disk of bone from the exact point in the parietal region to which she referred the pain. The bone presented no evidence of disease; the vessels of the diploë bled freely; dura mater healthy. An hour after the operation she raised the previously paralytic arm several inches from the bed, and was able to bend and extend the fingers. The pain in the head was considerably less, and her countenance, before dull and heavy, was now remarkably animated. Sensations had returned in the arm, and partially in the leg. In the course of three days the paralysis had completely disappeared, sight and hearing again became perfect, and, after passing through a speedy convalescence, she quitted the hospital completely recovered.

In a paper published in the English language, reference is made to a case placed on record in the fifty-sixth volume, *Recueil de Mémoires de Chirurgie*, etc., Paris, 1844, that is pertinent here: "A most extensive gunshot-wound of the face (suicidal), several of its bones being severely fractured; reparation, however, took place to a surprising extent, and that with very little constitutional disturbance. The patient was about to be discharged, ten weeks after his admission, when he complained of slight pains in the head, which quickly augmented in severity, and became accompanied by remark-

able prostration of strength and slowness of pulse. He died in four days, not having exibited any lesion of intelligence, loss of sensibility, paralysis, or convulsion. The examination proved, however, that mischief had long been going on within the brain, although untestified by any symptom until the last three or four days. The entire right anterior lobe was in a state of pulpy *ramollissement*, and its exterior surface converted into one vast abscess, extending beyond the fissura Sylvii; and communicating with the ventricles, into whose cavities, as well as into the vertebral canal, the pus had penetrated. Below, all cerebral matter was completely destroyed, the membranes alone separating the abscess from the bones. The internal surface of the left lobe, where it came in contact with the right, was also in a state of *ramollissement*. At the right side of the *crista galli* a perforation, communicating with the nasal fossa and frontal sinus, was discovered, large enough to admit the point of the finger. Looking into the nasal fossa, through this aperture, a foreign body was observed to be lodged within it, which was easily removed by a forceps. It proved to be half a bullet, so that the ball must have split into two pieces, one of which, after effecting the perforation in the ethnoid, fell back again into the nasal fossa and there remained. No foreign body whatever was found within the cavity of the skull."

It is evident, from the records of the profession, that blows may occasion destructive action in the brain and its membranes, and without any marked manifestation of the action, or the manifestations may differ in kind, may vary in degree, not at all corresponding with the profound injury of the brain, as in the case from the French memoirs of surgery, or may in the gravity of manifestations correspond with the profoundness of the injury, as in the case introduced here which was examined after death by myself. Or, the symptoms may be grave, and completely relieved by an operation that permits an examination of the parts, sufficient to expose the fact that neither the bone, the brain, nor its membranes, exhibit diseased action; yet it must have been there, for the patient was relieved, if indeed not cured by the operation, as in the case reported from the practice of Guthrie. And it is evident, from the records of the

profession, that blows upon the skull may break the external table, or the diploë, or the internal table, singly or in pairs, or altogether, and may detach the loose connection of membrane and surface of the internal table; and there may, or not, be immediate diseased action which may not or may progress, and constantly effect changes, and during continuance and progress, directly or indirectly, involve other tissue than that originally affected.

Do not the remarks and references thus made, in connection with the history of Proffit's case, tend to establish as a fact the dependence of his present condition upon the blow he received upon the left side of his head, at a time when he was in the discharge of his duty, and employed by the railroad company? And if so, is not the company liable to damages, etc.?

And is there not enough probability of benefit offered to justify, nay to demand, the performance of trephining? It is believed to be unnecessary to do more than make reference to the cases recorded by Dudley, of Kentucky, successfully trephined, to remedy epilepsy, paralysis, etc.

II.—*Two Cases of Paralysis of the Third Nerve.* By C. K. Fiske, M. D., St. John, New Brunswick.

Case I.—Mr. M——, barrister of this city, aged forty, on the 16th of December, 1869, while driving, incautiously jumped from a sleigh, and, coming in collision with another rapidly-driven sleigh, received so severe a concussion as to render him insensible for several hours.

His physician, Dr. Earle, was called, and gave all needed attention to his case till restoration to consciousness, after which he complained of no pain or distress in the head, and there was no external contusion or wound upon the head or body, and he seemed all right with the exception of inability to raise the left eyelid.

On being called to him in consultation, the following day, I found a complete paralysis of the third nerve; closure of the left eyelid, on lifting which, I found the eye turned far to the left and slightly downward, by the combined action of

the external rectus and superior oblique muscles; all motion of the eye suspended, the divergence being too great for double vision; the pupil dilated to about mid expansion; the accommodation power suspended, and withal giving the eye a vacant stare; vision confused and uncertain as to distances, causing a staggering gait when attempting to walk. I found the patient in bed, quite comfortable; mind clear, and memory good; pulse regular, and skin natural. He was required to remain in bed, and two or three leeches were applied to the temple; and, believing there had been sanguineous effusion near the origin of the nerve, it was decided that rest and rather low diet should be persisted in for a fortnight or more. The Calabar bean was applied to the eye daily, and, after the end of a fortnight, faradization was applied in various ways two or three times a week. Some small blisters were applied over the brow and behind the ear. The bean produced contraction of the pupil to some extent, but the iris did not readily come under its influence.

The patient was allowed to walk about the house and to drive occasionally, and during the month of February warm baths were taken once or twice a week, and iodide of potassium was administered in medium doses three times a day, the battery being applied two or three times a week; also the Calabar bean as at first till the 1st of March, when there was a sudden and marked change in the case. On that day the functions of the nerve became nearly restored, the ptosis entirely relieved, and the inward motion of the eye became nearly perfect; vision improved rapidly, and the accommodation power was soon fully restored, the pupil being contracted to nearly its natural size without the aid of the bean.

This case is remarkable for the completeness of the paralysis of the nerve and for the sudden restoration of its conducting power after so long a time—from the 16th of December till the 1st of March following.

Its record may be of interest to the practitioner, and assist in the prognosis of other cases of some weeks' standing, or even months.

This patient had been a "free liver," but readily consented to follow the advice of his physicians, and under a medium

diet, with abstinence from stimulants, his general health and tone of body have much improved, and there is very little doubt the final cure was due to these latter means, rather than to the use of the Calabar bean or the battery.

Case II.—Mr. T——, of this city, aged fifty-five, of spare habit, but rather full circulation, was suddenly attacked with ptosis of the left eyelid, attended with giddiness, on the 12th of February, 1870.

He was brought immediately to my office, when I found the following appearances: the left eyelid closed, which on lifting by my own hand, I found the pupil largely dilated, and the eyeball turned much to the left and somewhat downward; no inflammation or pain, but he complained of vertigo.

On inquiring into the causes I learned my patient had been, for many months, smoking large quantities of tobacco; a pipe in his mouth almost at all times, excepting while eating or sleeping. I directed him to go home to his rooms and remain within-doors, to take efficient purgative medicines, and to abstain from smoking.

On the following day I found him much better, vertigo relieved, but with no improvement in the appearance of the eye and lid. I applied the Calabar bean, which readily contracted the pupil, but did not relieve the ptosis. I directed iodide of potassium to be taken in three-grain doses three times a day, and abstinence from the use of tobacco in all shapes.

In the course of a fortnight the eye-symptoms were much improved, and by the middle of March the deformity was entirely removed, and at the present date the patient remains quite well.

The improvement in this case was gradual from day to day, while in the first case the change was sudden, after eleven weeks' duration, from complete ptosis, expansion of pupil, and strabismus divergens, to full restoration of the parts.

Bibliographical and Literary Notes.

ART. I.— *What is Malaria? and why is it most intense in Hot Climates? An Inquiry into the Nature and Cause of the so-called Marsh-Poison, with Remarks on the Principles to be observed for the Preservation of Health in Tropical Climates and Malarious Districts.* By C. F. OLDHAM, M. R. C. P. E., Assistant-Surgeon H. M. Indian Forces, etc. London: H. K. Lewis, Gower Street, 1871.

THE author of this book, after a long residence in India, and a careful study of malarial diseases, has arrived at some very positive conclusions, regarding the remittent and intermittent fevers, which he takes this means of placing before the profession. He begins by reviewing briefly the various theories on the subject of malaria, and endeavors to show that no one of them is adequate to account for the diseases to which malaria is supposed to give rise. Low, marshy regions, abounding in rank and luxurious vegetation, are shown to be sometimes free from so-called malaria, which on the other hand not unfrequently prevails where there is neither vegetation nor stagnant water. It is stated that under the equator the most healthy season is that in which the muddy banks and lagoons are exposed to the rays of an almost vertical sun, while the most unhealthy season is that in which all the rivers are full, and the swamps covered with water. Temperature alone, he argues, cannot be held accountable for malarial disease, for it prevails both in hot and cold climates, and at various seasons of the year; nor can it be attributed to a merely moist condition of the atmosphere; nor is it due to drinking the water of marshes.

After disposing successively of all theories and suppositions concerning the cause of the disease in question, the author comes to the conclusion that there is only one condition common to all malarious localities, and that is "a sudden and considerable lowering of temperature at sunset," added often to copious dew or a cold wind. The idea of the existence of a specific malarial poison is totally rejected, and the

sudden abstraction of heat is held to be the one thing needful for the production of intermittent fever and all its train of consequences. He says: "Each attack of intermittent or remittent fever, whether primary or secondary, arises from the operation of the same cause; while the increased liability to recurrence, after frequent or severe attacks, is owing, not to the presence in the system of any dormant poison, but merely to a depressed state of the heat-generating powers, similar to that which is produced by continuous exposure to great heat. In short, it is clear that the cause of malarious fevers is chill." Notwithstanding the author's formidable array of facts, we cannot agree with him that chill *alone* is sufficient to account for all the phenomena associated with intermittent fever. A sudden abstraction of heat, by lowering vital force, undoubtedly facilitates the action of malarial influences, and is an important element to be taken into consideration. But the characteristic malarial cachexia is a very different condition from a "depressed state" due to other causes. Another weak point in the author's argument is that concerning the action of quinine. He doubts the efficacy of quinine, both as a remedy for ague and as a prophylactic, simply because it does not always cure or prevent, and because many patients recover without it. He admits, however, what is self-evident to any one who has seen much of malarial diseases, that his own experiments with this subject have not been extensive. We are inclined to think that his opinions are based on insufficient personal observation, for he certainly has not succeeded in answering satisfactorily the question he propounds at the outset.

The peculiarity of Dr. Oldham's style, and it is a rare one in English authors, is a superabundance of commas, over which the reader stumbles awkwardly in almost every line.

ART. II.—*Minnesota as a Home for Invalids.* By BREWER MATTOCKS, M. D., President of Board of Health, St. Paul, etc. Philadelphia: J. B. Lippincott & Co., 1871.

BOOKS upon invalid resorts are rarely of great value, since, to undertake the labor of their preparation, the writer must

either be an enthusiastic admirer of the locality, or else have some special grievance to make known. Manuals of this sort then comprise those patently constructed in the interest of the local hotel-keeper or real-estate speculator; secondly, the rosy-hued accounts of some one who has fortunately found health in the spot upon which he gratefully lavishes encomium; and, last, the dissatisfied protests of the deluded invalid who, travelling far and finding little, undervalues the good he may have gotten.

Dr. Mattocks has foreseen all these difficulties, and has evidently tried to present at once an inviting and fair account of the climate of Minnesota, considered both as a sanitarium for invalids, and as a residence for those who "need no physician."

The book is encumbered with a discussion of consumption, which brings little information to the physician, and for the layman is unnecessary. The writer's argument is that consumption most frequently is checked, or proves least rapidly fatal, in a dry, equable climate, which is not so warm or bland as to be relaxing. Minnesota presents a climate answering very well these desiderata, inasmuch as it is ordinarily dry, with a variability small compared with that of the seaboard States. Moreover, the invalid may with benefit remain throughout the year, which is rarely true of Southern sanitaria. These are the advantages of Minnesota in a word. The doctor does not conceal the occasional disagreeable seasons that come, and it remains to be seen if these interruptions do not occur at all other places; at least, we suspect that this is one cause why nearly all places of winter resort, after being vaunted, are suddenly discarded. With the advantages which Minnesota presents of being a place where a man may escape death, and yet be a member of society, we have nothing directly here to do. Still it is a point well worth the consideration of those active men who look upon life as dearly bought at the price of a listless existence at a health-resort.

Dr. Mattock's style is such as to lead us to suppose his intent was to address a popular rather than a professional audience, and to the former we believe the book will be on the whole a reliable aid in the selection of a resort.

ART. III.—*A Practical Treatise on the Medical and Surgical Uses of Electricity, including Localized and General Electrization.* By GEORGE M. BEARD, A. M., M. D., and A. D. ROCKWELL, A. M., M. D., with 102 Illustrations. New York: William Wood & Co., 1871, pp. xxxv.–698.

THROUGH their numerous articles upon the subject of electrization the authors of this work are pretty generally known to the profession in this country. The object of the present work, we are told, is to combine the results of their own experience with the discoveries of others in such a manner as to make a complete hand-book of the subject. To this end they have divided their book into four sections, viz.: Electro-physics, Electro-physiology, Electro-therapeutics, and Electro-surgery. The first two parts give a good, clear, and adequate statement of the facts and laws of electricity, which have a bearing upon its medical application. The chapters upon electro-therapeutics comprise by far the larger part of the book—about three-fourths—and it is here we look for the points of chief interest in the volume. The range of diseases which are discussed is quite wide, including not only those of the nervous system, but those of the special senses, of the digestive apparatus, the larynx, together with rheumatism, the use of electricity in midwifery, etc. The large experience of the authors enables them to present a great number of cases illustrative of the points discussed.

Before the consideration of special diseases is entered upon, a chapter is given to the description of apparatus, in which Mr. Kidder is laid under great obligation for the extended notice of his machines. The methods of application are treated of with a degree of detail that is tedious and seemingly unnecessary. In Chapters XII. and XIII., however, much that is valuable is compressed into small space, the consideration, namely, of electro-physiological anatomy with special reference to localized applications.

The success attending the use of electricity in the cases presented is such as to give much encouragement for others to adopt its application.

The estimate of the relative value of galvanism and faradism (p. 156) seems to us to be just, and this correct apprecia-

tion of the applicability of the two agents makes us wonder the more at the extreme prominence given to the use of "general electrization."

This general electrization "is best accomplished by placing one pole (usually the negative) at the feet or the coccyx, while the other is applied all over the surface of the body." This method was, we believe, first formally advocated in this country by the authors, although we remember it twenty years ago or more as being in popular and empirical use. For it, however, they claim greater power as a tonic or nutrient agent than for any other method, not excepting galvanization of the sympathetic. In reading their cases it seems to have been constantly used, either alone or conjoined with localized applications. The general electrization is sometimes accomplished with the galvanic, sometimes with the faradic, current. We are well aware how much authority attaches to so extensive an experience as has fallen to the lot of the authors; nevertheless, from the evidence of the work before us, we are not converts to "general electrization." For we find the argument *post ergo propter* again and again creeping in, as in cases where to general electrization is attributed cures which, in our experience, are wrought by time and by concomitant circumstances, or by causes purely psychical. Again (p. 237), in giving the indications for the general electrization, first stand certain diseases in which galvanization of the sympathetic is of very considerable efficacy; second, certain cases where in default of diagnosis the application is made in the same spirit in which our grandmothers administered rum-and-molasses, because "rum was the sarchingest and molasses the healingest thing in natur," a practice certainly no more commendable than that of Benedikt condemned just below. Lastly, certain incurable diseases, such as "palsy agitans," etc. Here, again, we must cling to the ordinary methods of using the constant current, as from them have come the few authenticated cases of arrest or cure of the disease that we are aware of. In speaking thus, we do not intend to cast any doubt upon the reality of the benefit experienced from the use of general electrization. Simply, we believe that, as compared with other methods of applying faradism and galvanism, it is a

clumsy, empirical substitute, involving exposure and having other inconveniences, with few compensating advantages, except such as may be gained from impressing the imaginations of such patients as "like to have the doctor go all over them." The authors will pardon us if we suggest that probably the tenderness of god-parents prevents their properly judging its merits.

The use of electro-diagnosis is discussed in the book. Every one knows the value of the agent in determining the relative contractility of muscles, and sometimes of cutaneous sensibility—although here generally inferior to other æsthesiometers; but in other uses, especially in the search for internal disorders, it seems to us to fail for want of a standard of measure, or, if this were attained, because the test has the same element of error as the time-honored one "to tell good indigo."

The section on electro-surgery is valuable.

While we strongly demur to some of the teachings of the book, we can recommend it as a whole. It will doubtless be of great assistance to many practitioners everywhere who desire some guide for their applications of an agent potent for good or harm. It is because we believe the book will be much read, that we have taken the trouble to object to the plan of treatment which we feel sure is a retrogression, and which, if generally adopted, might lead to the relegation of electricity to that region of neglect from which it is now happily emerging.

Art. IV.—*Dress and Care of the Feet, etc.*, with Illustrations. New York: Samuel R. Wells, 1871.

This is an attempt to popularize a certain amount of anatomical knowledge with regard to the functions of the feet, and the best form of shoe to preserve them in their integrity. With this is mingled considerable discussion of points of construction, which are especially the shoemaker's business (the bulk of the book, it seems, originally appeared in a trade-newspaper). These suggestions to the tradesman are the more

valuable, as we find the great difficulty to be not the persuading the sufferer to wear a proper shoe, but the finding a shoemaker intelligent or painstaking enough to execute the surgeon's orders. There has been of late years a growing willingness among the people to wear a proper shoe rather than a fashionable one; yet there remain very many persons, particularly young ladies, who practically, if not verbally, accept the position of a patient of ours, who exclaimed, "Why, doctor, I would rather die than not wear French heels!" The author justly remarks, "The book is not written in the dignified style of a professor, nor with literary correctness;" still it is doubtless one which will have a good influence, if it leads any one to take an intelligent care of his feet. Yet there remains behind the danger that attends all popular medical books, namely, that "a little learning is a dangerous thing."

Art. V.—*Injuries and Diseases of the Knee-Joint, and their Treatment by Amputation and Excision contrasted.* The Jacksonian Prize Essay of the Royal College of Surgeons of England for 1865. By William Paul Swain, F. R. C. S., etc. London: John Churchill & Sons, 1869.

This book, though somewhat enlarged from its original form, still preserves the character of a short, succinct, and clear statement of the facts which a practical surgeon most wishes to know when the question presents itself, "Shall I amputate the thigh, or try to save the limb?" The subject proposed to the essayists confined the discussion to the two methods, amputation and excision, and it therefore in no way diminishes the value of Mr. Swain's researches that he has left unconsidered certain other plans of treatment (such as free incisions and the like) which would seem to us to be preferable in many of the cases presented. After a short account of the anatomy of the parts concerned, and a brief but good description of the diseases of the joint, for which amputation or excision may be demanded, the author presents the statistics of the operation of excision, and makes out a favorable case as against amputation of the thigh. In this conclusion we pre-

sume most surgeons of this part of the world would readily concur.

The chapter upon the method of operating and after-treatment are such as we should expect from a surgeon writing of a matter with which he is practically familiar, that is, with no unnecessary detail. Special accent is laid upon those points which are really important, and those little difficulties which, if not foreseen, may embarrass a surgeon in the midst of his operation.

While the author is a warm advocate of excision in cases of disease, he does not appear to give us much encouragement regarding excisions for injury, for it seems to us that some of the cases (especially that of Sir W. Ferguson, p. 116), counted as secondary excisions for injury, had every essential of cases of disease. Indeed, for a large proportion of cases counted as disease some slight injury can be found as an exciting cause. Taking, then, simply those very few primary operations that have occurred in civil practice and those in military surgery, the picture is not a cheering one. Mr. Swain, however, believes that improvements already suggested in the method of dressing will make, in the future, primary excision a desirable operation.

An appendix includes one hundred and four cases, illustrating the various points considered in the book.

The Physician's Prescription Book, containing Lists of the Terms, Phrases, Contractions, and Abbreviations, used in Prescriptions, with Explantory Notes; the Grammatical Construction of Prescriptions, etc. By Jonathan Pereira, M. D., F. R. S. Fifteenth edition. Philadelphia: Lindsay & Blakiston, 1871.

This little volume is intended chiefly for medical and pharmaceutical students, and the fact that it has reached its fifteenth edition is evidence that it has been widely appreciated. As an aid to a correct and uniform method of writing prescriptions it will be found particularly useful. The new edition is not increased in size, but has been revised and adapted to the

latest changes in the British Pharmacopœia. It contains both the old and new names of medicines in common use, explanations of all technical phrases and abbreviations, and a large number of specimen prescriptions.

Henry C. Lea, of Philadelphia, announces the following works: The Principles and Practice of Surgery. By John Ashurst, Jr., M. D. Five hundred and fifty Illustrations. The Practice of Surgery. By Thomas Bryant, F. R. C. S. A Practical Treatise on Diseases of Women. By Robert Barnes, M. D., F. R. C. P. A Practical Treatise on Urinary and Renal Diseases. By William Roberts, M. D. Second edition.

S. W. Butler, of Philadelphia, announces the following books: Cancer, its Classification and Treatment. By J. W. Bright, M. D., Lexington, Kentucky. Compendium of Modern Therapeutics. By Geo. H. Naphey, M. D. Third edition. Vesico-vaginal Fistula. By Prof. D. Hayes Agnew. Consumption, its Pathology and Treatment. By W. M. Logan, M. D., Cincinnati; and the Physician's Annual for 1872.

Lindsay & Blakiston announce the following works: Brown's Medical Jurisprudence of Insanity; Rindfleisch's Textbook of Pathological Histology; Gant's Science and Practice of Surgery, with 400 Illustrations; Wells's Dental Pathology.

J. B. Lippincott & Co. announce: The Teeth and how to save them, by L. P. Meredith, M. D., D. D. S.; and, The Prevention of Decay in the Teeth, by Robert Arthur, M. D.

Books and Pamphlets Received.—A Practical Treatise on the Medical and Surgical Uses of Electricity, including Localized and General Electrization. By George M. Beard, A. M., M. D., Fellow of the New York Academy of Medicine, etc., and A. D. Rockwell, A. M., M. D., etc., with one hundred and two Illustrations. New York: William Wood & Co., 1871, pp. 698.

The Physician's Prescription Book, containing Lists of Terms, Phrases, Contractions, and Abbreviations, used in Prescriptions, with Explanatory Notes, the Grammatical Construction of Prescriptions, Rules for the Pronunciation of Pharmaceutical Terms, a Prosodiacal Vocabulary of the Names of Drugs, etc. By Jonathan Pereira, M. D., F. R. S., etc. New

American from the fifteenth London edition. Philadelphia: Lindsay & Blakiston, 1871, pp. 286.

A Manual of Midwifery; including the Signs and Symptoms of Pregnancy, Obstetric Operations, Diseases of the Puerperal State, etc. By Alfred Meadows, M. D., Member of the Royal College of Physicians, etc. First American from the second London edition, revised and enlarged, with Illustrations. Philadelphia: Lindsay & Blakiston, 1871, pp. 487.

A Practical Treatise on the Diseases of Infancy and Childhood. By Thomas Hawkes Tanner, M. D., F. L. S., etc. Third American from the last London edition, revised and enlarged. By Alfred Meadows, M. D., London, Member of the Royal College of Physicians, etc. Philadelphia: Lindsay & Blakiston, 1871, pp. 559.

The Retrospect of Medicine; being a Half-yearly Journal, containing a Retrospective View of every Discovery and Practical Improvement in the Medical Sciences. Edited by W. Braithwaite, M. D., and James Braithwaite, M. D., London. Vol. lxiii. January to June, 1871. London: Simpkin, Marshall & Co.

What is Malaria, and why is it most intense in Hot Climates? An Inquiry into the Nature and Cause of the so-called Marsh-Poisons. By C. F. Oldham, M. R. C. P. E., M. R. C. S. L., Assistant-Surgeon H. M. Indian Forces, etc., etc. London: H. K. Lewis, Gower Street, 1871, pp. 186.

Historical Memoranda relative to the Discovery of Etherization, and the Relation to it of the late Dr. W. T. G. Morton. Prepared by the Committee of Citizens of Boston chosen to raise a Morton Testimonial Fund. Boston, 1871, pp. 16.

Handy-Book of the Treatment of Women and Children's Diseases, according to the Vienna Medical School, with Prescriptions. By Emil Dillnberger. Translated from the second German edition, by Dr. P. Nicol, M. D. Philadelphia: Lindsay & Blakiston, 1871, pp. 244.

On Some Disorders of the Nervous System in Childhood; being the Lumleian Lectures delivered at the Royal College of Physicians, of London, in March, 1871. By Charles West, M. D. Philadelphia: Henry C. Lea, 1871.

Fifteenth Annual Report upon the Births, Marriages, and Deaths, in the City of Providence, R. I., for the Year 1869. By E. M. Snow, M. D. Providence: Hammond, Angell & Co., 1871, pp. 56.

An Address delivered before the Alumni Association of the Jefferson Medical College of Philadelphia, at its First Anniversary, March 11, 1871. By S. D. Gross, M. D., LL.D. Philadelphia: Collins, 1871, pp. 29.

Minutes of the Twenty-second Annual Meeting of the American Medical Association. By W. B. Atkinson, M. D., Permanent Secretary. Philadelphia: W. B. Atkinson, M. D., 1400 Pine Street, pp43. Price 25 cents.

Plastics and Orthopedies: A Report republished from the Transactions of the Illinois State Medical Society for 1871. By David Prince, M. D. Jacksonville, Illinois, pp. 56.

On Chloroform in its Medico-Legal Bearings. By Charles Kidd, M. D., Member of the Royal College of Surgeons, England, etc. Edinburgh: Oliver & Boyd, 1870, pp. 12.

The Sphere, Rights, and Obligations, of Medical Experts. By James J. O'Dea, M. D. Reprinted from the Journal of Psychological Medicine.

Cholera Infantum; its Cause, Pathology, and Treatment. By D. W. Young, M. D., Aurora, Illinois. Chicago: R. Fergus's Sons, 1871, pp. 28.

Charlatans and Empirics; or, Dentistry as a Learned Profession. By A. P. Stevens, D. D. S., of Portsmouth, New Hampshire.

Transactions of the Eighteenth Annual Meeting of the Medical Society of the State of North Carolina. Raleigh: Nicols & Gorman, 1871, pp. 57.

Artificial Induction of Labor in Uræmia. By Samuel C. Busey, M. D. Washington, 1871, pp. 62.

Standard Supply Table of the Medical Department of the United States Army.

Reports on the Progress of Medicine.

SURGERY.

1.—*Lithiasis, Cystitis, Nephritis, Hæmorrhage, Death.* [Gesellschaft der Aerzte Wien.]

The following is a case of great surgical and pathological interest:

J. K., aged fifty-five, was admitted September 22d, complaining of trouble with the water, which had already lasted some years. A frequent impulse to micturate, the urine passed only with considerable straining. The stream frequently interrupted, and sometimes mixed with blood. The sound detected a stone in the bladder. Urethra quite normal; prostate not enlarged nor painful. The capacity of the bladder much diminished. Urine contained earthy phosphates, pus, and albumen, in small quantities. To increase the capacity of the bladder, lukewarm water was injected. After six days a decided increase showed itself. Lithotrity was then performed without any difficulty, and with complete success. The stone, which consisted principally of phosphates, came away in small pieces, and after three weeks no trace of it was present. The patient was free from suffering, and was discharged on the 11th of November. On the 17th of January, after two months' absence, the patient returned. He had been well for a month, without pain, and able to do his work as day-laborer.

When frequent micturition returned, with straining and frequent hæmaturia, he was much reduced and anæmic. Thoracic examination showed symptoms of emphysema of lower lobe and catarrh of right lung. Abdo-

men normal; kidney-region not painful; bladder very contracted. A stone was felt lodged in the prostate, which prevented the point of the sound from entering the bladder. The stone was easily laid hold of, but could not be pushed back into the bladder. The prostate felt hard and tender; bladder itself very contracted; urine dark-red brown color, much sediment, ammoniacal smell; alkaline-uroxanthin increased, chloride diminished; contained albumen. The sediment contained pus-blood; bladder epithelium, earthy phosphates.

As repeated attempts failed to push the stone back into the bladder, it was determined to perform urethrotomy and extract the stone. An incision was made in the median line of the urethra as far as the stone, which was found embedded in a pouch in the prostate, and already beginning to crumble away. It was easily removed with the small forceps. The operation was easily performed, and there was but little bleeding. Some hours after the operation he complained of severe pain in the left hypochondrium, for which morphia was subcutaneously injected. Some hours later cold sweats came on, livid hue of face; pulse thready, 130; severe pain over whole abdomen. Subcutaneous injection repeated, and patient fell into a deep sleep. Soon collapse set in, and at 8 P. M. he died. The cause of death was not apparent, as he had borne the chloroform very well, and there was no reason to think it had given rise to acute œdema of the lungs. The *post-mortem* examination explained it.

On opening the abdomen, the upper omentum was found covered with coagulated blood. The left half of the cavity of the abdomen filled with blood. Intestines matted together with lymph. The origin of the blood was traced behind the peritonæum to the left kidney, to which was attached a very distended, fluctuating sac, filled with fibrous coagula. The sac had burst at its upper part, and communicated with the cavity of the peritonæum; kidney itself much enlarged, containing numerous abscesses and masses of pus. The cortical and medullary substance congested and pervaded with fresh exudation. The kidney, calyces, and pelvis, much thickened. Both ureters thickened, obstructed, and widened. Bladder much contracted, water thickened. Capacity much diminished. Mucous membrane almost stripped off; the bladder itself only large enough to contain a few drachms of urine at a time. Right kidney enlarged; contains exudation, masses of pus, abscesses, but no extravasation of blood. The fibrous coat peeled off. There can be no doubt the sudden hæmorrhage into the cavity of the peritonæum was the cause of death. It is remarkable that, with the exception of a small amount of albuminuria, there were no special symptoms to indicate the diseased state of both kidneys.

Rokitansky, in speaking of the case, said the sac which enveloped the kidney, and was filled hæmorrhagic exudation, consisted of the tunica albuginea and the fat covering of the kidney. The kidney parenchyma very much enlarged, juicy, and softened. The softening of the kidney-substance led to the bursting of a vessel. The tunica albuginea became more and more distended with effused blood, and at last formed an enormous sac filled with blood. The sac burst, and discharged into space behind the peritonæum, and then into peritoneal cavity. Mucous membrane of bladder in great part destroyed, and in its place was a diphtheritic coating.

The disease in bladder was intimately connected with the disease of kidneys. An uninterrupted chain of pathological changes, which began in inflammation of kidney parenchyma, extended to the calyces and pelvis of kidney, and so through ureters to bladder. In the right kidney were found the signs of inflammation without hæmorrhage.

2.—*Excision of the entire Scapula, with Preservation of a useful Arm.* By M. Schuppert, M. D. [New Orleans Journal of Medicine, January, 1870.]

For a complete history of this operation, the reader is referred to the record in this Journal for January, 1869, and February, 1870:

Theresa Bastian, thirty-six years old, born in Michelbach, Baden, a stout woman, with dark eyes and hair, and a fair complexion, unmarried, came to this city in the earlier part of 1868.

She suffered from a large tumor, comprising the right scapula, for which she had already undergone three operations. The first time she was operated upon in 1859 by Dr. Beck, a military surgeon in Freiburg; the second and third time in 1866 and 1867 by Drs. Miller and Gauss in Baden-Baden, but by these operations the scapula had remained intact.

The skin covering the tumor was rich in cicatrices, the marks of former operations. These cicatrices presented a bluish color and a smooth surface; were much thinner than the surrounding skin, and, like the rest of the integuments, movable over the tumor. The tumor from its posterior margin to the acromion process measured 0.18 metre, the largest extent in a vertical line being 0.21 metre. Active motions of the humerus were nearly arrested, the passive motions very much limited. The extremity could not be further removed from the body than to an angle of forty-five degrees. The extensive pain patient suffered in the arm brought her to me in search of relief. Having given her consent to a proposed removal of the entire bone, the operation was accordingly performed on the 30th of March, 1868, in presence of Drs. Barnes, Gray, Gentebruck, Riley, Schwarzwaelder, and some other medical gentlemen. Patient being in a deep chloroform narcosis, a crucial incision was made through the skin; one cut, beginning at the acromion process and carried over the most protuberant part of the tumor, ended near the spinal column; a second incision over the middle of the tumor bisected the first. The four skin-flaps were dissected off and held back by sharp hooks. The acromion process was divided with a small saw, laying bare at the same time the scapulo-humeral articulation. The head of the humerus was then by rotating the arm dislocated inward, to get at and remove the coracoid process. Lifting up the scapula by its glenoidal cavity, which was found to be involved in the disease, the whole of the scapula was detached from the body by keeping the knife close to the under-surface of the tumor. The removal of the tumor left the ribs visible through the cellular tissue, which was all that remained of the sub-scapularis muscle, lost in the diseased mass.

The bleeding was inconsiderable, the main vessels having probably become obliterated by the former operations; with the exception of a few muscular branches no arteries had to be ligated. The skin-flaps were adjusted and united by interrupted pin sutures, leaving an opening at the most dependent part to permit the draining of the secretion. Acetate of morphia, 0.03 gramme, was subcutaneously injected. After patient had perfectly recovered from the anæsthetic condition, she was unconscious that the operation had been performed. The arm was bandaged and kept close to the body, supported by a sling.

Patient suffered much nausea subsequently, and vomited during several days from the effects of chloroform. No unfavorable symptoms happened, to require medication. A nourishing diet was ordered from the first day, and continued during the convalescent state.

The sutures were removed on the third day. Most of the incisions had healed by first intention. Suppuration was considerable, and notwithstand-

ing the well draining of the wound two abscesses formed in the arm, discharging a great quantity of pus. The wound was syringed out daily with glycerine, containing ten per cent. carbolic acid. On the 10th of June the last secreting opening had closed.

At the present date, eighteen months after the operation, there is no indication of reappearance of the disease in any part of the body. The skin, of which no part had been removed, though after the excision of the tumor it formed a large sac, has so contracted that a part of the cicatrix forms now a portion of the covering of the humerus. Theresa, who enjoys excellent health, has thrown away the sling long ago; the arm has no artificial support, and is a more useful instrument than before the operation. Though its motions are limited, there is sufficient strength in the extremity to lift a weight of thirty pounds and throw it a fair distance.

3.—*Amputation by the Combination Plan.* By A. T. Hudson, M. D. [Boston Medical and Surgical Journal, November, 1870.]

In the *American Journal of the Medical Sciences* for January, 1870, Dr. Stephen Smith, of Bellevue Hospital, has an article on "Amputation at the Knee-joint by modified Lateral Flaps." He approvingly quotes the following statement from Markoe:

. . . "It is really of comparatively little consequence what particular method of cutting the flaps be adopted, provided only that enough integument be left amply and easily to cover the expanded extremity of the femur." With a high regard for the above names, let me ask is not the "method of cutting" one prominent question to be discussed? How shall we know when we have enough, and not too much, except by some "method of cutting?" We answer, a definite rule to secure this end, without mistake or failure, is reached by the combination plan. This plan fell to me to work out while in the United States service, a few years ago, and only now fully described; although Dr. Smith, having obtained the points from myself, has published much of it as a contribution to surgical knowledge, leaving the reader to infer it was wholly his own.

The amputations made in the First Division of the Fifteenth Army Corps, following the assault on Vicksburg, and the taking of Arkansas Post, were by the circular, by transfixion, and antero-posterior flaps, as generally made. The results thereof were often so troublesome, vexatious, and unsatisfactory, we resolved on a new method. Erichsen gave a hint to compromise between the circular and that of transfixion, wherein are combined the advantages of both, without their defects.

The first case operated on by the combination method was a soldier in the Fourth Iowa Volunteers, in December, 1863, at the foot of Lookout Mountain, near Chattanooga, Tenn. Amputation below the knee as follows:

With a scalpel or cartilage knife, an incision is commenced at the posterior side of the leg, and carried in a downward semicircular sweep, to the crest of the tibia, just through the integument. The lowest deflection of the sweep is nearer the posterior leg. The same cut, beginning and terminating as before on the opposite side, completed, the skin is then retracted as in the circular operation, which lays bare the muscles for the space of an inch. Then transfix the inner side and cut outward, as in other flap operations, dividing the muscles an inch shorter than the retracted integument. The scalpel or cartilage knife is used to divide the muscles on the fibular side. The saw is now applied at an angle of forty-five degrees, and a diagonal cut made three-fourths of an inch deep; when the direction of the saw is changed, and the bones and the wedge-shape chip are severed together by a transverse cut.

Removal of the wedge-shape chip from the spine of tibia stump also removes an old objection, viz., the danger of the sharp bone cutting through the thin integument by ulceration. The flaps thus obtained make a fine, smooth, and conical stump, without any crowding or stretching, and without redundance. They are of equal size. The surgeon is not puzzled with the task of trying to fit a four-inch flap to a six or eight inch fellow. This plan presents many advantages over every "method of cutting the flaps:"

1. The avoidance of all after-trimming.
2. Quicker and more certain union by first intention.
3. Drainage is complete, and pockets of ichor and pus avoided.
4. The stump presents no puckering or pouting corners.

The operation proved so superior and satisfactory in the above case that it was adopted by several surgeons in our division of the army thereafter, for all amputations of leg, thigh, and arm.

In all cases the stump is traversed by the cicatrix. Dr. Smith and others object to this result, on the ground that it is "not firm and resisting, and not adapted to take direct support." This is a groundless fear, and has been long a bugbear, and innocent obstacle to the work of the surgeon; for direct pressure on the stump is never borne, and never allowed. All successful leg-makers permit no floor for the stump to touch or rest on; but support the entire weight of the body by the sides of stump, the condyles of the knee, and the tuberosity of the ischium.

In a cavalry-boy, at Kenesaw Mountain, Ga., in January, 1864, whose leg was amputated by the above method in the lower third of the femur, it became necessary to reopen the stump to secure a bleeding artery, twenty-four hours after the operation. It was gratifying to witness how promptly the flaps had become glued together in initiatory union, requiring considerable force to separate them.

At the close of the war, while our division was encamped at Alexandria, near Washington, in May, 1865, Dr. Smith, while visiting the several divisions of the army, called on us; and, on learning the particulars of our operation, expressed interest in it, and gratification at the result. He remarked that it was new to him, and inquired about its origin. Fergusson speaks of an operation (*Lancet*, July, 1865) as the "compromise," and thinks it appropriate for the thigh and arm. But he *transfixes* the integument and cuts the deeper parts by the circular sweep. He therefore does not describe or follow our plan, which we believe suited to nearly all amputations; and when below the knee, it is infinitely superior to all others.

4.—*The Electrolytic Treatment of Hydatid Tumors of the Liver.* [Lancet, November 19, 1870.]

Drs. Fagge and Durham, at a late meeting of the Royal Medical Chirurgical Society, presented a paper on this subject, based upon eight cases of hydatid disease of the liver successfully treated by electrolysis. The authors believe that this method of treatment has not hitherto been adopted in any other case of the same nature in the human subject.

The operation was performed in the manner recommended by Dr. Althaus in his treatise "On the Electrolytic Treatment of Tumors." In each case two needles were passed into the tumor, and were connected with the negative pole of a modified Daniell's battery of ten cells. The positive pole, terminating in a moistened sponge, was placed upon the surface of the abdomen. The current was allowed to pass for a period varying from ten to twenty minutes in different cases. The needles were then withdrawn. A little clear fluid in some cases appeared at the seat of the punctures.

No preliminary tapping nor exploratory puncture was made in any case. The diagnosis rested on the facts that the patient had a rounded, elastic

tumor projecting from the liver, and that this was *cystic*, as proved by the needles rubbing freely against one another in its interior, although introduced an inch or two apart.

The operation was followed in most cases by rapid diminution of the tumor, which even shortly after the operation became soft and flaccid. At the same time, in some cases, fluctuation became perceptible in the lower part of the abdomen. The authors believe that some of the hydatid fluid probably escaped through the punctures made by the needles, having been possibly forced out by the accumulation of hydrogen gas in the interior of the cyst. The success of the operation would thus appear to depend, not on the direct action of the electric current, but on its effecting, as it were, a kind of subcutaneous tapping; and they suggest that simple acupuncture might possibly be followed by equally successful results.

Slight febrile symptoms, and more or less pain, in most cases followed the operation; these symptoms, however, rarely lasted more than three or four days. In one instance they were entirely absent. In most cases the patients were able to get about in a few days, and some of them were discharged from the hospital at the end of two or three weeks. Even at this early period the tumor had already, in some cases, very manifestly decreased in size; and, as a rule, this decrease, when once it had fairly commenced, steadily progressed. After the lapse of six months or a year, when each patient returned for examination, no trace of the disease remained; or, at most, there was only some ill-defined fulness of the epigastrium.

In one case only the result still remained doubtful. In the remaining seven cases the favorable issue above described had already taken place. All the patients were in perfect health. In each of them the tumor had been large, and in at least one instance it had reached quite unusual dimensions. In three cases more than one cyst existed, and each cyst had then to be electrolyzed separately. In the latter part of the paper the results of electrolysis are compared with those of simple tapping—the operation which has hitherto been most successful in the cure of hydatid diseases of the liver. The authors claim for electrolysis that it rivals simple tapping in being unattended by immediate danger to the life of the patient, and that it is to be preferred, inasmuch as (according to their experience up to the present time) it involves no danger of suppuration within the cyst, and consequent risk and suffering—results which often follow simple tapping.

5.—*Removal of Naso-pharyngeal Polypus by Displacement of the Superior Maxillary Bone.* [Boston Medical and Surgical Journal, November 10, 1870.]

M. Verneuil related a case of removal of a naso-pharyngeal polypus before the Société Impériale de Chirurgie, which excited some discussion before that body, which we extract from the *Gazette Hebdomadaire* of August 19th:

A child, sixteen years of age, of a good constitution, entered the Hôpital Lariboisière on the 16th of June. In the month of October, 1869, the disease first showed itself by a slight difficulty of respiration, with occlusions of the left nasal fossa and epistaxis. In December, the left cheek became swollen, and hearing disappeared on that side.

On her admission to the hospital, there was noticed a tumor on the left cheek, the size of a turkey's egg, firm, slightly movable, not adherent to the skin. The left nasal fossa was closed by the tumor. The velum palati was depressed. Exophthalmos was commencing on the left side. Snoring respiration, only, by the mouth; complete deafness on the left side. Deglutition somewhat difficult. No pain. Vision perfect. A naso-pharyngeal polypus of considerable size existed on the left side, springing from the

base of the cranium, filling the pharynx and sending prolongations into the nasal passage, the maxillary sinus, the orbit, and the pterygo-maxillary fossa.

Operation, the 29th of June. The patient was chloroformed. The superior maxilla was removed rapidly and without hæmorrhage into the mouth. A polypus was found, having a net-work of vessels, which poured out blood freely. The pedicle was about three centimetres in diameter, attached high up in the pharynx, so that it was reached with difficulty. M. Verneuil removed the polypus in portions. The blood collected in the mouth. Forceps were applied to the pedicle, but the blood nevertheless did not cease. The patient was removed to bed, when syncope supervened. The blood was drawn out from the air-passages, and air admitted. The child began to cry, when the hæmorrhage, which had been arrested by the syncope, recurred. The same means for resuscitation were attempted, but the patient succumbed, in spite of efforts for resuscitation. M. Verneuil thought that the erect position, which he had adopted, with a view to arresting the hæmorrhage, had been the cause of death, and not the action of the chloroform. M. Le Fort considered that the chloroform had predisposed the patient to syncope, and had been to a great extent the cause of death. MM. See and Liégeois expressed the opinion that the death ought to be attributed to asphyxia by the penetration of blood into the air-passages. M. Forget coincided with this opinion, and called attention to the fact that the recurrence of the symptoms at every fresh entry of blood into the air-passages, and the momentary resuscitation on the removal of the blood, and the admission of the air, showed that asphyxia and not syncope was the cause of death.

6.—*On the Treatment of Carbuncles.* By William Marcet, M. D. [Lancet, January 14, 1871.]

The author, in a note based upon some communications which have from time to time been made concerning the so-called Indian boils, says:

The first sign of a carbuncle is usually denoted by a sensation similar to that produced by a slight prick with a pin, occurring when the hand is passed over the affected part. Nothing may be seen yet on the skin, but some few hours later a small vesicle appears, when the pain becomes more acute, and may be caused by the mere contact of the clothes. If the carbuncle be allowed to proceed, say, for twelve hours beyond its very first appearance, it will run its usual course; but its progress may be arrested by the early destruction of the vesicle and its contents by means of the cauterizing action of heat. I have adopted many plans to effect this purpose; but the simplest of all, and one which may be considered as always at hand, is the use of an incandescent lucifer-match. The vesicle is to be merely touched, for a fraction of a second, with the red-hot point from five to seven or eight times in succession, when it assumes a dull-whitish appearance from the coagulation of the albumen it contains. The end of a hot wire may also be used. The pain of the operation is really trifling, and it will save from a week to a fortnight's suffering. I have repeatedly applied this form of actual cautery to myself, and shall not hesitate to do so again if necessary.

In general, within four or five hours after the operation, the pain from the incipient carbuncle has in a great measure disappeared, and there is an end to it. It may happen, however, that the carbuncle, at its origin, is deep under the surface of the skin, when no vesicle appears. I have not been so successful with the use of the actual cautery in these cases as in the others; but probably, had the cauterization been carried deeper, the mischief might have been arrested.

The present treatment suggested itself to me from a consideration of the nature of the vesicle which precedes a carbuncle. This vesicle appeared to me to contain a virus, which was the real cause of the subsequent inflammation, and I concluded that by destroying this virus the carbuncle might be "nipped in the bud." I have tried the local application of nitrate of silver and nitric acid, but they cannot be relied upon, and I fully believe that nothing will act so satisfactorily as the cauterizing action of heat.

I may observe that, for the treatment to be successful, it should be applied as soon as possible after the first appearance of the carbuncle. The progress of boils in this country could probably be arrested in the same way, and it might be worth the while to try whether Indian boils might be cured by the present means.

The treatment I am recommending may not be new; but, if such is the case, it is certainly little known; and I hope this will be accepted as my excuse for the present communication.

7.—*Fracture of the Sternal End of the Clavicle.*

Dr. Robert W. Smith sums up an article on fracture of the sternal extremity of the clavicle, in the *Dublin Quarterly Journal* for August, with the following conclusions:

1. In fractures of the acromial extremity of the clavicle, between the coraco-clavicular ligaments, when displacement occurs, it is in general limited to an alteration in the direction of the bone, by which the natural convexity of this portion of the clavicle is increased.

2. In cases of fracture between the trapezoid ligament and the sterno-clavicular articulation, the displacement of the outer fragment is considerable, and is frequently carried to such an extent that the fragments form a right angle with each other.

3. The doctrine of non-displacement in intra-rhomboid fractures has not yet been established upon so secure a basis as to justify its acceptance as a truth.

4. In intra-rhomboid fractures, the displacement of the sternal fragment, if it ever occurs, is the exception; that of the acromial fragment, to a greater or less extent, constituting the rule.

5. The explanation is, that the former is firmly connected by strong ligaments to fixed and immovable parts, while the latter is under the influence of three causes of derangement of position, viz., muscular action, the weight of the upper extremity, and the mobility of the scapula.

6. The influence of these causes in producing displacement of the outer fragment is not confined to intra-rhomboid fractures.

7. In fractures of the inner extremity of the clavicle the nature of the derangement of the acromial fragment is uniform, and its direction constant, viz., forward. The first rib offers a mechanical obstacle to its displacement backward.

8. The rhomboid ligament, from its direction, would permit of the outer fragment being displaced forward and downward, to a limited extent, were the bone broken internal to it.

8.—*Spontaneous Fracture of the Femur.* [Lancet, December 3, 1870.]

At a meeting of the Clinical Society of London, November 25, 1870, Mr. Durham related a remarkable case of spontaneous fracture of the femur. When first seen by him in March, 1867, the patient, a professional man, aged forty-four, was seated, half-dressed, in an easy-chair. He thought himself capable of walking about, and was surprised to find this

impossible. The right femur was found broken at the junction of the upper and middle thirds, the limb being shortened by three inches. Three months previously the patient had fallen down-stairs and hurt his thigh; but he soon felt nothing of the injury, which he thought a trifling one. Seven weeks later, however, he began to have aching pain in the thigh, which was considered and treated as neuralgic; and when this had lasted three weeks, he felt, on going to bed one night, a sudden increase in the pain, and fell on his bed in great agony. Next morning he could not move the thigh, which was much swollen. He was quite unconscious of having subjected the limb to any sudden strain. After a few days the swelling and pain diminished, and he got up, but could not walk about; and it was about ten days after that Mr. Durham, visiting him for the first time, in consultation, found his thigh broken. Under treatment the bone united; in the course of four months the patient could move about; two months later he returned to professional work. He remains quite well. Mr. Durham thought it probable that, at the time of the fall, some injury of the bone had taken place, which had been followed by gradual interstitial degeneration and absorption of bony tissue, instead of healthy repair, leading to spontaneous fracture of the bone. The patient had, it seemed, been subjected to great worry and wear and tear of brain, and Mr. Durham suggested, as a topic for discussion, the relation which may exist between overwork or excitement of brain and defective nutrition of bone.

9.—*Division of Patella.* By James S. Knox, M. D.

On the afternoon of July 3d last, I was called to see a healthy young German, aged twenty-three, who, while felling trees, had been struck by a descending limb, and had the blade of his axe driven into his right knee. On examination, I found an incised wound over the knee, the length of the blade of the axe, dividing the patella obliquely across from right to left, but sparing both quadriceps and patella ligaments. In dressing the wound, the two parts of the patella were turned aside, exposing the whole interior of the joint, with its smooth articular surfaces; clots were washed out with cold water, the bleeding of articular branches checked by torsion, the parts accurately coadapted, and stitched together by close interrupted suture. A straight splint was then applied behind the joint, a saline cathartic administered, and the knee kept drenched thoroughly in ice-water, for three days, until all heat and swelling had disappeared. There was no synovitis or suppuration, nor was pulse ever above 80. The wound healed rapidly, the patella uniting by osseous union. In three weeks the splint was removed, and in nine weeks the patient danced most of the night at a German ball, without inconvenience or perceptible limp. The scar is, now, the only sign of a serious injury.—*Transactions New Jersey Medical Society.*

10.—*Fracture of the Clavicle from Muscular Exertion.* By W. E. Whitehead, M. D. [Pacific Medical and Surgical Journal, March, 1871.]

P. G., German, aged twenty-eight years, one hundred and forty pounds' weight, five feet six inches high; a very strong and muscular man. While attempting to raise himself to the top of a platform, about eight feet high, felt something snap near his left shoulder-joint. He paid little or no attention to the matter till the next morning (the accident having occurred at about 9 o'clock P. M.). He slept very comfortably, with little or no

pain, except when he attempted to recline on the left side, when the pain compelled him to change his position. Upon making an examination I found the clavicle fractured, just at the edge of the trapezius muscle. In this case the trapezius muscle only extended to about the junction of the outer with the middle third of the clavicle. The fracture was transverse, and involved the entire bone. Crepitation was easily obtained by fixing the inner two-thirds of the clavicle, and moving the shoulder up and down by seizing the arm, and making the motion. There has been scarcely any swelling, and no discoloration of the tissues at the seat of fracture, which is, at this date, uniting rapidly and properly. The subject of the injury has a very large, muscular system, in a measure disproportioned to his bony skeleton; for his bones are small, with small hands and feet.

11.—*Perforation of the Œsophagus and Vena Cava Descendens by a Foreign Body.* [Berliner Klinische Wochenschrift, October 24, 1870.]

Dr. E. Coester, of Haina, in whose practice this case occurred, prefaces his communication by saying that a peculiar interest attaches itself to this case, inasmuch as no suspicion of the real condition of things was entertained till autopsy, and that the day previous to death a perforating ulcer of the stomach was diagnosed.

On the 11th of November, the patient, a man fifty-six years of age, complained of severe abdominal pains, which were paroxysmal in their character. These pains commenced in the epigastrium and extended over the entire abdomen. Pressure did not augment them save in the epigastric region, and even here the suffering was no greater than in an ordinary gastric catarrh. Excepting a loss of appetite, the patient complained of nothing additional. The pulse was small and hard, the skin cool and moist, and the tongue coated. Morphine relieved the pain, and, as the bowels had not been opened in two days, castor-oil was prescribed, which operated the same day. This relieved the patient, and it was not till the following day that he complained of a feeling of pressure in the epigastrium. Loss of appetite continued, and with it the tongue was coated, but moist, and the temperature slightly elevated. On the 17th, recovery was apparently complete. Animal broths were the only food allowed, but at one time the patient ate cooked plums.

In the afternoon of the 17th the pains reappeared, and were more severe than in the beginning. The patient referred his troubles to constipation, his bowels not having been opened for thirty-six hours. His complaints were much the same as in the first attack, and upon deep pressure the left hypochondrium was very painful. The diagnosis was then made of a gastric ulcer, though vomiting and other confirmatory symptoms were wanting. Morphine was given; the first dose was vomited, but the following ones were retained. Small quantities of black, coagulated blood were expectorated. The pain in the left hypochondrium increased in severity; the pulse was small, scarcely perceptible; the skin was cool, and covered with perspiration. Morphine relieved the pain, and soon after its administration the pulse became fuller, the skin warmer, and the patient was left in a comfortable condition. In an hour, however, the pain returned, and blood was again expectorated, the patient dying suddenly soon after.

At the autopsy, the right pleural cavity was found filled with serum and coagula. The stomach was also filled with blood, but was otherwise normal. In the œsophagus one-half inch above the diaphragm and on the right side, was found a piece of bone; one-half of it was in the œsophagus, and the other had formed a pouch in the wall of the canal, in which it lay.

The former was eroded, probably by the muriatic acid which had at one time formed part of the treatment, while the latter was smooth and shining. The presence of this foreign body had doubtless excited an inflammation which had resulted in adhesions between the vena cava and œsophagus, for both were perforated. The wife of the patient, after his death but before the autopsy, told me that her husband was in the habit of biting bones and sucking them, and it is probable that he had swallowed one of these pieces unknown even to himself.

Miscellaneous and Scientific Notes.

Chronic Lead-Poisoning. — Interesting experimental researches have been made recently by Dr. Heubel on the pathogenesis and symptoms of chronic lead poisoning, which we find in detail in the *Centralblatt Medizinischer Wissenschaften*, No. 19, 1871: Through Gusserow the opinion has obtained that, in chronic lead-poisoning, the massing of the lead occurs principally in the muscles, and that hence the muscular paralysis. Dr. Heubel, doubting this assertion, instituted fresh experiments upon the distribution of the lead in the body. Dogs were chosen in preference. They received, with the food (generally one-half pound meat, and the same of bread), during the first weeks of the experiment, 0.2 to 0.3 gramme neutral acetate of the oxyd of lead, from which quantity, gradually increasing, the dose was raised up to 0.5 gramme, which, according as they died sooner or later, they received in the last two to four weeks. Larger doses would neutralize the experiment by disturbance of digestion. Water was given without stint. As a rule, already after a few doses, a failure of appetite occurred; the latter, however, returned in most cases, so that the animals often took their apportioned quantity of lead a few hours before death. In a few cases the digestive disturbances, vomiting, diarrhœa, flux of saliva, were continuous; they often, for the space of two or four days, took very little nourishment, and therefore but little lead was given, yet the quantity of lead absorbed into the blood and organs was essentially the same as by the first named. As regards the symptoms of lead-poisoning, all the animals experimented on presented a more or less striking atrophy of the whole body, especially a most marked loss of muscularity, particu-

larly of the back and hinder parts, etc. Where disturbances of digestion persisted, the loss of weight reached fifty per cent., with less interruption with the food, twenty to forty per cent. The loss of flesh is therefore partly to be attributed to the disturbed digestion.

Attacks of lead-colic were rarely noticed. They always occurred suddenly. The animal, until now quiet, runs yelping and howling around the room, seeks to hide himself, but runs forth again immediately, attempts to spring upon a high table or window-seat, as though he would escape, etc. This state having lasted about half an hour, the animal again lies down, eats with his previous appetite, and drinks much. Such attacks were repeated, in the same animal, but were not observed in the majority. Lead-paralysis was not observed, but with the general emaciation a striking debility (paresis) of the hinder parts. Eclampsia saturnina was constantly produced by the gradual poisoning; it appeared generally not earlier than the fourth or fifth week. The animals fell suddenly, at times with a loud cry, and were attacked with severe convulsions, which lasted one half to one hour, and not unfrequently several hours. At such times the mouth was rapidly opened and shut, and there was a copious flux of stringy spittle. The pupils were enlarged, and reacted slowly, reflex excitability extremely pronounced, fæces and urine often passed during the attack. At such times the animal was in a soporific and comatose state. Generally the attacks occurred in the form of a deep coma with convulsive movements. After such seizures, the animal may entirely recover; usually, however, the signs of approaching death presented themselves, and death usually occurred with the phenomena of such an attack. From this is to be deduced that, in agreement with the experiments of Rosenstein, a marked diminution of the diuresis preceded the attack; it is true, however, that the animals had also taken less drink.

The urine, beyond the varying amount of bile coloring matter, also observed by Rosenstein, presented nothing abnormal. It was always free from albumen. Only rarely, even in a large quantity, could lead in very minute traces be detected. The fæces were at first almost normal; in the later

stages an obstinate constipation usually set in; the voided masses were dark, almost black, of firm consistency, without being strikingly dry, and contained varying quantities of lead. Where digestion was disturbed, the evacuations were more frequent, and the passages thin and watery. Death occurred earliest at the end of the fifth week. If the animals are well fed with good food, they may be kept alive eight or nine weeks, in spite of the large quantity of lead administered. If the digestion is disturbed so that the animals receive but little lead, they appear to be no longer-lived. The fat of the subcutaneous cellular tissue as well as that about the heart, bladder, kidneys, etc., had almost entirely disappeared. The muscles, especially those of the back, chest, and hind-legs, were strikingly emaciated; the muscles were otherwise normal. The brain was generally normal, but the entire substance was more moist and softer than natural. The spinal cord had an anæmic appearance; it also was softer than natural. The organs of the thorax normal. The heart was spared the atrophy of the other muscles. Nothing abnormal in the large vessels; the intima was always found fully intact. Liver healthy, and with generally an unusual fulness of blood; while the spleen, kidneys, and pancreas, were bloodless, and appeared shrunken, but otherwise healthy. The gall-bladder was almost always distended with dark-green bile; the ductus choledochus pervious. The gastric mucous membrane was of a pale slate-green, at times much corrugated; the mucous membrane of the small intestine in its lower part, and that of the large intestine, of a pale gray, here and there covered with a copious tough mucus; otherwise, like the intestinal mucous membrane, generally normal.

The author then gives a table of the amount of lead found in the different organs, which shows the following order of decreasing percentage: Bony substance, right and left kidneys, liver, spinal cord, brain, muscles, intestines. In the remaining organs, as the spleen, pancreas, lungs, and heart, it was not even possible to demonstrate to a certainty the presence of the lead. The not inconsiderable quantity of blood gave on a qualitative analysis proof of the lead.

(In the following number of the *Centralblatt*, No. 20, Prof. Heubel concludes his article.) Finally, in order to

ascertain the relative capacity of different tissues for the absorption of lead, Dr. Heubel instituted direct experiments upon portions of equal size of the brain, liver, and thigh-muscles; these were placed in a solution of the lead, and left for twenty-four hours, then washed, dried, weighed again, and analyzed. This experiment showed that here also the muscular tissue had absorbed the least, the liver the most lead. Now, when in chronic lead-poisoning, in the muscles of the thigh less than 0.003 per cent., in the intestines only about 0.001 per cent., and in the blood mere traces of lead only are found, while in the brain 0.005 per cent., in the spinal cord 0.008 per cent. of lead appear, then surely the hypothesis of the irritation of the lead contained in the vessels upon the muscular tissue, and the opinion that the lead absorbed by the muscles produces a contraction of the smooth and striped muscular fibres, are decidedly set aside.

Besides this, the stringent action of the soluble salts of lead, as well as those of iron, silver, copper, alum, etc., and of tannin, when brought in contact with the mucous membrane, wounded surfaces, etc., depends solely upon the formation of insoluble combinations with the albuminoid matters, and ends with this chemico-physiological process; also the internal use of such astringents in enlargements of the vessels has been shown to be entirely illusory. It is also probable that the lead held by the blood is not contained in the serum of the blood, but, like other heavy metals, is taken up by the blood-corpuscles. Millon found that, in the blood of individuals exposed to the absorption of minute quantities of copper and lead into their food, drink, etc., these metals were to be found almost exclusively in the blood-corpuscles, while the serum contained only the most minute quantities. When Henle ascribes to the lead in the muscles of the intestine, in the flexors of the extremities (the most frequent seat of arthralgia), and in the abdominal muscles, an almost exclusively convulsive contraction, and, on the other hand, in the extensors no spasmodic action, but always paralysis, he attributes to the same substance in similar organs (the striped muscles) essentially different actions: in arthralgia acute, and in paralysis chronic effects. That the severe pain of lead-colic

is produced by the pressure of the contracting intestinal muscles upon the nerves of sensation is, considering the low sensibility of the intestines and of the mesentery, highly improbable. Falk has already shown that by this view facts and consequences have been distorted. The obstinate constipation is not essentially produced by a checking of the secretions, but depends probably upon an intense excitement of the nervus splanchnicus, the action of which controls the peristaltic movements of the small intestine. It is, upon an irritation of the centripetal fibres of the splanchnicus, by which the frequency of the heart's contractions is diminished by reflex action, that the striking decrease in the frequency of the pulse observed during lead-colic may depend. The splanchnic major also, according to Bernard, contains fibres, the irritation of which lessens the flow of blood to the kidneys, and also their secretion, and hence perhaps the diminished diuresis. Abortion in pregnant women is not only the consequence of chronic lead-poisoning, but it occurs also frequently in quicksilver-poisoning, and, according to Mitscherlich, results frequently in all cases of slow poisoning. The emaciation also occurs in other forms of poisoning, such as quicksilver and arsenical cases. The rapid loss of muscular tissue in lead-poisoning results partly from the digestive disturbances, partly from the paralysis, which latter, as well as the extinguishing of the galvanic contractility, is probably dependent upon the action of the lead upon the intra-muscular terminal nerve-fibres.—The question now suggests itself whether an affinity of the lead toward any other tissue can be demonstrated, by which the symptoms of lead-poisoning may be declared. That the liver and spleen contain a relatively larger amount of lead is principally because it is through these organs that the lead is taken up to be expelled from the organism. Next to these organs the brain and spinal cord contain the greatest quantity of lead. Now, even though the different portions of the nervous system, the ganglia, and the peripheric nerves, could be tested for their perhaps large relative proportion of lead, it should nevertheless follow that, of all the organs of the body from the direct affection of which the phenomena of lead-poisoning can be deduced, the nervous tissue is that which

possesses the greatest affinity for lead. The minute quantity of lead taken up by the nervous system, and the fact that the lead is also deposited in the other organs, should not argue against the view that "lead in chronic lead-poisoning produces the most of those characteristic phenomena by directly affecting certain parts of the peripheric and central nervous system, and in fact affects it by being absorbed into the substance of the parts themselves in larger or smaller quantities, in a longer or shorter time, in some combination thus far imperfectly understood." All other matters which are certainly known to affect the functions of specific portions of the nervous system certainly pass also into other portions of the organism, and are not demonstrable in relatively larger quantities in the nervous system than in other parts. "The nervous system reacts much more acutely and rapidly to every injury than other organs." The intermittent character of the symptoms of lead-poisoning is suggested as an argument against a primary affection of the nerves. Certainly lead cannot quickly be eliminated from the organs, or transformed into harmless products, like readily soluble matters, such as alcohol, chloroform, the salts of potash, urea, the salts of strychnine, curare, etc. But lead-palsy, anæsthesia, etc., also show the continuous action of the lead. Furthermore, the intermittent character of lead-colic and lead-arthralgia is proof against the continuous absorption of the lead into the sensitive nerves in question, for these morbid conditions presuppose a decidedly slighter affection of the nerves than lead-paralysis and anæsthesia, since experience teaches that continuous pathological influences affecting sensitive nerves are nevertheless never accompanied by uninterrupted pain, but always with more or less severe pain, alternating with painless intervals. The author believes that the bones may retain sufficient quantities of the lead to reproduce the symptoms years after apparent recovery, the lead passing into more susceptible organs. The liver and kidneys may retain lead for a long time, and a full recovery is only then assured when it has passed from all the organs of the body.

In order to decide the question whether the emaciation is produced by a drying effect of the lead upon the tissues, the

author weighed the fluid contents of the organs of three healthy dogs, and three dogs dead of lead-poisoning. The results showed that the relative amount of water was greater in the organs of the poisoned animals, which goes to show that the lead deposited in the organs does not produce a dryness of the substance of the organs. The blood was examined by taking a specimen thereof before the administration of the lead, and also after the appearance of marked symptoms of poisoning, and testing them after Scheerer's method. The result was that during the lead-poisoning there was a diminishing of the solid portion, and a marked increase of the fluid portion, equalling 24 to 25 per mille; a decrease of the red corpuscles equalling 50 per mille; a decrease of the albumen of 4.5 to 7.5 per mille, and a slight increase of the extractive matters. The chronic phenomena, headache, sleeplessness, stupor, loss of memory, melancholia, and mania, etc., are probably dependent upon the deposit of lead in the brain.

The author found, in the bodies of dogs dying with the symptoms of eclampsia saturnina, in most cases, the brain anæmic, œdematous, and explains the œdema by the thinning of the serum of the blood, but especially by the diminished diuresis. In those cases of death by eclampsia, with no special cerebral œdema or anæmia of the brain, the phenomena are to be attributed to the massing in the brain of the matters otherwise passed in the urine, in which matter not only urea, but also, according to Voit, the salts of potash are to be reckoned. That the diminished diuresis, as Hermann and Rosenstein assert, favors the deposit of the lead in the brain, is not probable, because only very slight traces of lead are found in the urine.

Dr. H. Fischer on Trophic Disorders.—If the injury has occurred to a nerve of one of the extremities, there appears in the course of three to four days an œdematous swelling, which is more marked on the back of the hand or foot, fingers or toes, than upon the palmar or plantar surfaces; after two to three weeks a rosy redness supervenes, which extends (Paget's "glossy fingers"), and is accompanied by a constant burning pain, which is relieved by cold compresses. Upon incising

into such a glossy hand, the skin and its cellular tissue are found peculiarly puffy and shining, the outflowing serum contains many white blood-corpuscles, and under the microscope is found a delicate, minute-celled infiltration, as described by Volkmann and Stüdener in erysipelas.

At the same time trophic changes appear in the nails; they either cease growing, or grow very slowly, or they fall out, and either are not replaced at all, or are misshapen; they are then yellowish, friable, rough, curl up, or become thickened, solid, and crack. The hairs increase often at first very rapidly, later on they fall out.

At subsequent periods exanthematous eruptions show themselves, most frequently eczema; it locates itself in preference upon the edges of the nails and in the palms of the hands, and produces small ulcers, which are very slow to heal; after a diffuse eruption of eczema the burning pains in the limbs, at times, abate. Herpes, which Charcot and Rouget at first described as consequent upon lesions of the nerves, Dr. Fischer has not observed; on the other hand, ecthema frequently; large blisters on the fingers and ends of the toes. Psoriasis the author has not met with, although he is inclined to regard it as a tropho-neurosis, but has frequently met with detachment of ragged portions of the epidermis; in two cases the desquamation followed the course of the subcutaneous nerves, in fine lines, while the interjacent portions of skin presented no desquamation. The last of the chain of trophic disorders consists in neuro-paralytic ulcerations. The sores occur on the ends of the fingers and toes, only the deeper and more severe forms occur in other parts; they appear months, and sometimes even years, after the injury. Some of these are of traumatic origin (burns, frost-bite, pressure on the paralyzed part), and but slight injuries are needed to call them forth. Others, however, are certainly of idiopathic origin. The superficial ulcerations on the ends of the fingers and toes are progressive stages of the exanthematous blebs, or result from panaritium superficiale; they are generally numerous, penetrate only as deep as the subcutaneous tissue, often follow exactly the course of the larger nerve-trunks, are of a sluggish character, and have but slight tendency to heal; do however heal, but

only to reappear: in other places the deeper sores in the hand must be regarded as panaritium mutilans, without any essentially constitutional disturbances, and without any great pain. The terminal joints of the fingers enlarge conically; the enlargement remains for a time indurated, then softens, breaks, and there occur deep sores extending down to the bones, very sluggish in character, and gradually extending themselves, the bone becoming carious or necrotic. These sores heal very slowly, or not at all, and generally produce deformity. In the foot these ulcerations frequently appear under the guise of *mal perforant du pied.*

The deeper-seated tissues also participate. The muscles become atrophied and permanent contractions result. At the joints there often occurs a chronic adhesive inflammation, which finally leads to anchylosis, and this in the fingers and toes; the wrist and ankle are very rarely so affected. The joints become painful, swell, passive motion gives crepitation, and the joint is finally destroyed. Hydrarthrosis rarely happens; occasionally, however, caries of the joints. The bones are affected with a peculiar concentric atrophy. In young persons the bones cease to grow from that time forward, either in length or in calibre; thus the fingers and toes are smaller and shorter, and become conical because this osseous atrophy always commences at the terminal bones. Meanwhile, before this peculiar change of the bones begins, a massing and thickening of them can generally be observed. Precisely similar changes may be produced artificially, although the experiments generally take some time in animals. The temperature of the paralyzed part is at first higher, later on lower; perspiration is also greater than in health; in this respect, however, there are many exceptions. As regards the manner in which all so-called trophic disorders are produced, the author suggests that they are of traumatic origin, since sensation is often quite normal. We must therefore regard purely trophic nerves as the result of injury, and, if special trophic fibres exist, they must act as regulators to nourishment, since their injury produces hyperplastic effusions and hypertrophies, before atrophy sets in. "I agree, therefore," says Dr. Fischer, "in many respects with Samuels, who stands alone

as the defender of a system of trophic nerves."—*Berliner Klinische Wochenschrift*, 1871, No. 13.

The Lymphatics of the Brain.—Golgi's opinion of the structure of the perivascular lymphatic spaces of the brain is that the lymphatic vessels of the brain are canals which are bordered externally by a very delicate, irregular granular membrane (*adventitia lymphatica*), internally by the walls of the blood-vessels. The external wall may be separated, by treating it with silver, into regular fields of endothelium, as His has asserted. The dimensions of the perivascular spaces present great variety to the demonstrator. Dr. Golgi has prepared two tables:

1. In the first place, there is a variety according to the age of the individual. In children the diameter of the perivascular canals is somewhat larger than in adults (averaging seventy μ in children, sixty-two in adults). It is probable that on this fact rests the frequent diffuse fatty degeneration of the cells of the adventitia lymphatica, by which the spaces become enormously dilated.

2. The region of the brain also exercises a marked influence, and produces differences not unessential. The perivascular spaces are largest in the hemispheres; then follow, in decreasing order, the corpora striata, the thalami optici, the cerebellum, pons Varolii, and the lamina cribrosa.

3. Finally, the size of the lymphatic spaces does not increase with regularity according to the diameter of the blood-vessels, but rather a reversed relation holds good.

The sudden enlargement of the blood-vessels of the brain (*congestio cerebralis acuta*) contracts the perivascular spaces in question to disappearance, and *vice versa* a contraction of the blood-vessels (*anæmia cerebralis*) increases the perivascular spaces. In certain individuals who in consequence of chronic heart and lung affections are disposed to venous stases and to serous transudations, a great dilatation as well of the blood-vessels as of the perivascular lymph-spaces may occur simultaneously. In atrophia senilis there appears, at the same time with a marked dilatation of the blood-vessels, also an enormous dilatation and sinuosity of the perivascular canals.

Cerebral œdema is also always connected with a decided dilatation of the lymphatic vessels.

The affection of the brain described by Durand Fardel (*Traité des Maladies des Vieillards*, Paris, 1854), under the name of *état criblé*, is attributed by Drs. Golgi and Bizzozero (*Cbl.*, 69, 410) to a dilatation of the perivascular lymphatic vessels, and Dr. Golgi gives the results of two *post-mortem* examinations, which almost exactly coincide with Bizzozero's case. Perhaps the extraordinary dilatation of the lymphatic vessels, which gives the brain the porous appearance, is the consequence of an atrophy of the cerebral substance, somewhat as broncho-ectasia results from shrinking of the lung-tissue. As regards the other case, also cited by Bizzozero, in which with acute meningitis numerous pus-corpuscles were found collected in the perivascular spaces, Dr. Golgi gives another and almost completely identical *post-mortem* result. In six other briefly-noted cases of meningitis, the perivascular spaces were also found clogged full in each case by pus-globules, and not only in the regions lying nearest to the seat of inflammation, but also in remote parts of the brain. Among fifteen brains of new-born infants Dr. Golgi found only one single one without fatty degeneration, as well of the lymphatic walls as of the cerebral substance. In thirteen the lymphatic walls were more or less affected with fatty degeneration; and one brain presented, together with an extraordinarily developed fatty degeneration of the lymphatic walls, also the change of brain-substance described by Virchow as *encephalitis congenita interstitialis s. diffusa*, which Hayem (*Étude sur les diverses Formes d'Encéphalites*, Paris, 1868) would regard as the normal condition of the infantile brain. Dr. Golgi regards the change in the lymphatic walls as primary, and the affection of the brain-substance itself as secondary and subsequent. Even in adults a partially similar affection of the lymphatic walls is not rare. Among other pathological changes of the lymphatic vessels Dr. Golgi notes the deposit of calcareous matter, and deposit of pigment. A minutely-described *post mortem* of a man dead of tubercular meningitis suggests the opinion that the rapid extension of the tubercular process in the pia mater and in the brain depends upon the fact that the

perivascular spaces facilitate the transport of the cell-elements. That they serve as passages for the wider distribution and dissemination of malignant tumors in the sense suggested by Recklinghausen and Koester, is strengthened by the likewise extremely minute description of a *post-mortem* case where exceedingly numerous minute metastatic sarcomata of the lymphatic spaces occurred.—*Estratto d. Rivista Clin.*, Bologna, 52, S. 80.

On Hydrocephalus Externus.—Arndt calls attention (*Virchow's Archives*, LII., 42) to the various conditions which different writers have described under the name of hydrocephalus externus, and then turns to the views of Virchow, who entirely denies the existence of a hydrocephalus externus in the sense of the older writers, that is, a free effusion between the dura mater and arachnoidea; but rather applies this name to a collection of serous fluid between the dura mater and a superimposed pseudo-membrane, as indeed rarely occurs in consequence of a chronic pachymeningitic process. The two cases, which Dr. Arndt himself accurately describes, are to prove that a hydrocephalus, even in that original sense, in fact occurs. The first regards an imbecile, aged twenty-five, who died of dropsy of the lungs and abdomen. In this case was found, on the inner surface of the dura mater, on both sides, a fully developed thick pseudo-membrane, which extended from the falx over the cranial cavity, and in the anterior portion included nearly the entire basis. Under this yellowish gelatinous membrane on the left side was a mass of clear, yellowish fluid collected, which had depressed the corresponding portion of the brain to a considerable extent. The pia mater appeared only slightly opaque and little softened by the fluid; its veins were much distended on each side of the sinus longitudinalis for about one and a half inch with rust-colored, obstructing coagula, but otherwise with fresh blood. The longitudinal sinus itself contained, for a short distance, similarly discolored thrombi. In the second case, that of a paralytic, aged forty-five, the dura mater, greatly distended, on being punctured gave vent to a mass of pale-yellow, clear fluid. Here also there occurred, besides, a very extensive pseudo-membrane on the convexity on both sides, between which and the arachnoid the fluid

named was collected. As regards the mode of formation of this collection of fluid, the author holds it as most probable that an exudation from the substance of the pseudo-membrane, and especially from its internal lamellæ, was poured out upon the free surface, as may occur in similar manner, in rare cases, in the neo-membrane itself, or externally between it and the dura mater. The well-known assumption of the older writers, that hydrocephalus externus (*ex vacuo*) may occur as the consequence of a diminishing of the volume of the solid parts filling the cranial cavity, especially in old age, Dr. Arndt regards in so far correct that he has confirmed the fact itself by these two cases. He, however, differs from the older authors essentially in this, that, as the basis of his observations, he regards the existence of a pachymeningitic process a necessary contingent to this condition, and at the same time regards it as the real cause of a massing of fluid between the dura mater and arachnoidea.

Pessema—a New Skin-Disease.—Beigel, in *Virchow's Arch.*, vol. xlvii., p. 367, has described a skin-disease which he calls papilloma area elevatum: A patient, at thirty, presented on face, arms, and legs, elevations about an inch long, upon which crusts formed, on the removal of which a spongy surface was exposed. Nine months before, Berg observed the following analogous case: A prostitute, forty-three years of age, who had suffered repeatedly with syphilis, presented on November 25, 1868, an eruption on the face, which might be compared to a variola with enormous pustules; the elevations were the size of a large checker-man, covered by skin, regular, the surface smooth, and of a yellow color, of a firm feeling, and surrounded by a red areola. The thin pellicle was easily rubbed off, and a few drops of pus exuded from a mass of minute depressions; on wiping off the pus, an injected, reticulated tissue was disclosed. The right side of the forehead presented two such elevations, the left several smaller ones; on the face were a number of the size of those mentioned, viz., 20 to 24 mm. in diameter. On the hairy scalp were a few abortive pustules; on the point of the tongue one pustule. Over the sternum two pustules the size of a pea. On the follow-

ing days the elevations on the face enlarged, and there appeared on the trunk several new ones. Nine days after the patient suffered from a severe attack of cephalalgia, which was increased, especially a week before the outbreak of the eruption, and then subsided. (The boy in Beigel's case had an attack of "convulsions" just before the eruption, which then ceased.) The author suggests a vaso-motor neurosis; he does not regard the syphilis as the cause. Therapeutically he observes: "No active treatment was called for; cataplasms of cold water, then, as the crusts formed, compresses with barley-water and lead-water, and touches with lunar caustic, were employed." Beigel named the disease "papilloma area elevatum;" but as a hyperplasia of the papillæ is present in various skin-diseases (and in the one in question has not even been confirmed), Beigel rejects this appellation, and, in reference to the similarity of the elevations to checker-men, πεσσός—he prefers the name "pessema," since our meagre knowledge of the pathological anatomy of the diseased condition of the skin suggests no name taken from the diseased process itself.—(*Deutsch. Klinik*, No. xv., 1871.)

A Peculiar Form of Infantile Paralysis.—Dr. Simon describes (*Virchow's Archives*, No. 52, 103, 111) a diseased condition which occurred in a nearly-similar manner in two of three children, sisters. The children learned to speak late and imperfectly, their gait was imperfect, and when brought under observation there was great deficiency of intelligence and marked motor weakness in the upper and lower limbs. The walk, only possible with assistance, resembled that of rachitis; in addition, spasms and attacks of unconsciousness occurred. One of the children, three years old, died; the morbid appearances were only at their commencement with the third child. The *post mortem* of the dead child showed a softening of the left hemisphere (reddish soft mass), which almost entirely occupied the white portion extending from the anterior lobes nearly to the surface, reaching partly into the gray substance; the temporal lobes and the circumference of the base of the brain were also extensively diseased; no traces of the insula of Reil in the parietal lobes, but many foci of various sizes.

The right hemisphere showed also a large number of spots of softening, some extending to the cortical substance. The large ganglia, the pons, cerebellum, and medulla, were free from disease; the vessels at the base not obstructed; the spinal cord showed no evidences of disease to the naked eye, and it was not possible to examine microscopically. Dr. Simon thinks that in these children numerous encephalo-malacious deposits existed in the brain from birth, that these at first gave rise to slight symptoms, but that from the second year the spread of the disease had increased, producing in one of the cases cited attacks of unconsciousness, until finally, in the case under *post-mortem* examination, the single portions coalesced into one mass of softening, and terminated life. Although the disease occurred in three sisters, its causes were not traceable; two other sisters of the same family, nine and eleven years of age, were healthy, nor was syphilis to be discovered.

The Formation of Urea.—The methods thus far adopted (by Prevost and Dumas, Oppler, Perls, Zaltsky, and Gréhaut), to prove or disprove the part taken by the kidneys in the formation of urea, are based principally upon the examination of the blood of the renal vessels passing to or from the kidneys, or that of the general system, with a view to its changeable proportion of urea with retained or extirpated kidneys, or with extirpation of the kidneys with ligation of the ureters. The uncertainty of all the modes of fixing the amount of urea in the blood induced Dr. Rosenstein to adopt a new method for the purpose. He compared the amount of urea in the urine in dogs, with the same food, after the retention of both kidneys, and the extirpation of one. The result was, that where one kidney only was left, the same amount, and generally even more urea was secreted, than where both were retained. As long as this result was obtained only some time after the extirpation of the single kidney, it was convincing, because in the mean while the remaining kidney was decidedly enlarged, and an augmented compensatory function through an increase of tissue or of secretory elements might be assumed. Meanwhile Dr. Rosenstein obtained the same result in one animal which before the operation had been put on

full diet, and whose desire for food was by no means diminished by the operation. In this case the elimination of the urea, in both the days following the operation, was the same as before, when both kidneys were present. Since in these two days no noticeable increase of size took place in the remaining kidney, it certainly follows that the kidneys do not take part in the formation of urea.—*Centralblatt Medizinischer Wissenschaften*, No. 2371.

A Question of Priority.—We have received the following letter from J. S. Lombard, M. D., late Assistant Professor of Physiology in Harvard University:

I wish to call attention to an error in the last of Prof. Moritz Schiff's excellent articles entitled "Recherches sur l'Échauffement des Nerfs et des Centres Nerveux à la suite des Irritations Sensorielles et Sensitives," published in the *Archives de Physiologie Normale et Pathologique*, July and August, 1870.

In speaking of the investigations which I have made on the relation between various mental conditions and the temperature of the head, Prof. Schiff claims priority in the discovery of the facts announced by me. He says that he has not seen the original paper, but knows my experiments only by the analysis of them which appeared in the *Archives de Physiologie* of September, 1868. He then states that, as early as the winter of 1867–'68, he communicated his principal results and his method to the Museum of Natural History of Florence, and that the Italian journals published short extracts of them in April and May of 1868. Herein rests his claim to priority. Prof. Schiff evidently supposes that my original paper had appeared but a short time before the analysis in the *Archives;* but, on the contrary my researches had all been published in the New York Medical Journal of June, 1867, and had therefore appeared more than a year before the analysis. My date of publication is consequently six months prior to the earliest date claimed by Prof. Schiff. But I can go back still farther, and show that earlier than June of 1867 most of my results had been communicated to the "Boston Society for Medical Observation." In fact, many of the experiments had been completed in the autumn of 1866. However, as claims to priority in scientific discoveries must always be settled by the dates of publication, it is unnecessary to do more than to call attention to the date of publication of my original paper, to prove that, so far from having been anticipated by Prof. Schiff, I had, on the contrary, anticipated him by several months.

The Functions of the Spleen.—Prof. Mosler, of Greifswald (*Centralblatt Med. Wiss.*, No. xix., 1871), gives the following, as the results of thirty extirpations of the spleen:

1. The spleen is not absolutely needful to the life of the animal.

2. After extirpation, as well as after artificial atrophy of the spleen, its function is taken up by the remaining lymphatic organs. The medulla of the bones appears to have an important *rôle* to perform in this respect. In it, some time after extirpation of the spleen, striking changes are found, like those attending leucæmia (Neumann). Hyperplasia of the lymphatic glands was not observed.

3. The vicarious activity of these glandular organs, which seems to be dependent upon many outside relations, is not always complete in animals in whom the spleen has been extirpated, for, especially in the first months after the extirpation or after artificial atrophy of the spleen, the blood is found changed in its composition. From this there is to be deduced an immediate influence of the spleen in the preparation of the blood, and, in fact, as these experiments go to show, a formation of white corpuscles as well as of the red.

4. Upon *gastric* and *pancreatic* digestion the spleen exercises *no* influence whatever. The voracity of animals deprived of the spleen, which has been adduced as proof thereupon, does not exist as a constant symptom.

Progress of Cholera.—The latest reports state that cholera has appeared suddenly in Königsberg, Prussia, a town of about seventy-five thousand inhabitants. On the 14th ult. sixty-two cases occurred, of which twenty-two proved fatal. It is reported from Berlin that the disease has entered Riga, where special hospitals have been established and medical men told off for duty. At Tambow, a town of Central Russia, having thirty thousand inhabitants, four hundred and fifty-eight persons died of cholera in the week ending July 13th. In St. Petersburg the disease is on the increase. On July 7th there were fifty-six attacks and twenty-one deaths from cholera in that city. The total number of deaths in St. Petersburg from the beginning of the epidemic on August 29, 1870, to July 7, 1871, was two thousand one hundred and seventy-eight. The disease is said to have reappeared with great violence in various parts of Persia, aggravated doubtless by the

general famine in that country. In London, during the week ending July 29th, seventeen deaths were referred to cholera and choleraic diarrhœa.

Carbolic Acid in Intermittent Fever.—Inveterate intermittents, which had proved entirely intractable under quinine, says Freulich (*Wien. Med. Press.*, No. xii., 1871), were rapidly and effectually cured by carbolic acid, without any ill results. The average amount taken was $4\frac{1}{3}$ grains. Three grains of the acid were added to six ounces of infusion of gentian, of which mixture a tablespoonful was taken thrice daily. Freulich details eight cases with considerable enlargement of the spleen, which obstinately resisted quinine, and which, in a strikingly short time, were cured by carbolic acid. This result gives some color to the theory that miasmatic fevers are dependent on a parasitic poisoning of the blood.

A Peculiar Nervous Affection.—At the last session of the Vienna Royal Academy of Sciences (*Centralblatt Medizinischer Wissenschaften*, May, 1871), Dr. Fieber made some remarks upon a disease of the nervous system as yet unnoticed, which was observed in a patient of his in the general hospital. This affection is characterized by an inability to execute moderately rapid movements in response to the impulse of the will, while very deliberate or very rapid motions are made without any difficulty.

Lady Students.—At a recent meeting of the Lecturers at Surgeons' Hall, Edinburgh, a resolution was passed rescinding the resolution of last year permitting instruction to female as well as male students. The cause of the ladies seems, therefore, to be losing ground where it was deemed most secure.

On the other hand, we learn from the *British Medical Journal*, that a Russian lady, Marie Bokowa, of St. Petersburg, has just graduated with distinction in medicine, surgery, and obstetrics, at Zurich. She rendered valuable services in the war hospital at Hericourt.

London Hospital Appointments.—Dr. Hyde Salter, of Charing Cross Hospital, has resigned on account of ill health, and

is succeeded by Dr. Silver. At University College Hospital Dr. T. F. Roberts has been appointed Assistant Teacher of Clinical Medicine. In the same college Mr. Berkley Hill and Mr. Christopher Heath have been promoted from the grade of Assistant Surgeon to that of Surgeon. At St. Bartholomew's Hospital Mr. Paget has been appointed Honorary Consulting Surgeon.

Medical Roughs.—Under this heading the *Lancet* administers a very severe rebuke to a certain party of Edinburgh medical students, for their recent cowardly and dishonorable conduct toward lady students who were inoffensively pursuing their studies. But it is admitted that "the ill-advised conduct of grave and learned seniors in the profession has offered only too plausible an excuse to the heated blood of younger partisans to indulge in coarse excesses."

Honors to Medical Men.—Prof. Billroth, in recognition of his services during the late war, has received the iron cross. The order of the iron crown of the second class has been conferred on Dr. Frerichs, of Berlin. M. Ricord and M. Demarquay have been promoted to the grades of Grand Officer and Commander respectively of the Legion of Honor, as a recognition of their valuable services during the siege of Paris. The Queen has just bestowed on Mr. Paget the honor of knighthood.

Welcoming Cholera.—It is frightful to contemplate the advent of cholera in the present sanitary condition of this city. Many of the side-streets are horribly filthy, and it is high time that the most energetic measures were adopted for cleaning and disinfecting them. There is no question of the danger to which we are exposed, and if the disease is once allowed to obtain a foothold it will doubtless spread with great rapidity.

The English Anatomy Act.—By the provisions of the new anatomy act, the period within which certificates of interment are to be transmitted to the Inspector of Anatomy is practically extended two months. This change is a very welcome one to the medical colleges, as it greatly facilitates the practice of dissection.

Poisoning by Calabar-Bean.—Seventeen children were poisoned in Liverpool lately by eating Calabar-beans which they had picked up on vacant land. It is supposed that the beans had been taken with rubbish from some ship or dock. None of the children died.

A Profitable Dinner.—The treasurer of the new St. Thomas's Hospital, London, announces that the profits of the dinner, given to raise funds for furnishing the hospital, amounted to $55,000, which is more than half the sum required.

Charity Hospital Appointment.—Dr. William M. Chamberlain has received the appointment of visiting-physician to Charity Hospital, to supply the place left vacant by the resignation of Dr. Janeway.

Simulation of Insanity.—The *Lancet* credits the current statement that Lady Mordaunt has been returned to her father's family, competent authority having declared that her insanity was feigned.

Appointment.—Dr. Erskine Mason, late Demonstrator of Anatomy in the College of Physicians and Surgeons, has accepted the position of Adjunct Professor of Surgery in the University Medical College.

Opium in Tennessee.—The climate of Tennessee seems well suited for the growth of the opium-poppy, and several experiments in its cultivation have proved very successful, the yield of opium having been from thirty to fifty pounds per acre.

University of Pennsylvania.—The chair of Principles and Practice of Surgery in this college, rendered vacant by the resignation of Dr. Henry H. Smith, has been filled by the appointment of Dr. Hayes Agnew.

Blackman's Successor.—It is announced that Dr. W. W. Dawson has accepted the chair of Surgery in the Ohio Medical College, left vacant by the death of Prof. Blackman.

Long Island College Appointment.—Prof. Henry S. Cheever, of the University of Michigan, has been elected to the Chair of Physiology and Microscopic Anatomy in the Long Island College Hospital, of Brooklyn, New York.

Roosevelt Hospital.—The work on the interior of this hospital is so nearly finished that the building will probably be open for the reception of patients during the present month.

The Successor of Longet.—M. Lacage Duthiers has been elected by the Academy of Sciences, Paris, to the seat left vacant in that body by the death of Prof. Longet.

The Effects of Bombardment.—The *British Medical Journal* publishes the following interesting summary of the official reports of the bombardment of Paris and Strasbourg:

In the civil population of Strasbourg, from the 13th August to 20th December, 168 men and 63 women were killed or died of their wounds; 49 persons died subsequently of their wounds up to 31st December, in all 280. The mortality among the wounded was at the rate of 31.8 per cent. The total number of civilians wounded, therefore, appears to have been about 900. The first two deaths were on the 13th of August. The worst days were the 25th September (14 deaths), the 9th (13), the 25th and 27th August (12). At the commencenent of the bombardment a projectile fell into the orphanage of the Rue Arc-en-Ciel, and struck 8 young girls—4 were killed, 4 others underwent amputations, and have recovered. In the garrison, the losses were as follows: 117 deaths from fire-arms; 436 from shells. The first deaths among the soldiers occurred on the 24th August—eleven days after the death of the first civilian. The general mortality of the city during August and September of 1869 was 363; in the same months of 1870 it was 1,132. With these figures may be compared the official statistics relating to the Prussian siege of Paris. The capital was bombarded for twenty-two days—from the 5th to the 27th January, 1871; 31 children, 23 women, and 53 men—in all 107 persons—were killed among the civil population. There were besides 276 wounded, of whom 36 were children, 92 women, and 148 men, which brings the total civilians killed and wounded to 383. The worst night was that of the 15th, when the number of victims exceeded 30. The general mortality, which averages 900 to 1,000 each week, rose toward the end of the siege to 4,500 to 5,000. In 1869–'70, there died in Paris, from the 18th September to the 24th February, 21,978

persons; in the same period, 1870–'71, the mortality rose to 64,154.

A Test for Hysteria.—The *Medical Press and Circular* directs attention to a French work recently issued by Dr. Chairon, entitled "Clinical Studies on Hysteria." Dr. Chairon is chief medical officer to the Vesinet Asylum, and bases his opinions on an experience with 26,000 female patients, among whom were a great many cases of hysteria:

He says that he has ascertained that in every one of them the commencement of the affection has been marked by a special sign—insensibility of the epiglottis. The determination of this symptom, which is constantly present, is very simple. It is sufficient to introduce gently the finger into the mouth, so as not to frighten the patient, and place it on the base of the tongue. It will be found that the epiglottis may be touched, displaced and scratched with the nail without producing the least regurgitation. When this condition exists there will be found invariably a congestion of one or both ovaries, usually of the left.

Obituary.

Thomas Hawkes Tanner, M. D., F. L. S., M. R. C. P., died in Brighton, July 7th, at the early age of forty-six. He began practice in London, in 1847, and since then had held several responsible appointments, and enjoyed for many years past a very extensive practice. His "Manual of the Practice of Medicine," originally published in 1854, has gained in popularity with each successive edition, and from a mere pocket manual has grown to a complete work in two large volumes. He was the author also of "Signs and Diseases of Pregnancy," a "Practical Treatise on the Diseases of Infancy and Childhood," "Clinical Medicine," an "Index of Diseases," "Memoranda on Poisons," and several smaller works and papers on various subjects. The leading characteristic of his life was indomitable industry, which enabled him to accomplish a vast amount of work, though at the sacrifice of his own health. He had been suffering for several years from renal disease consequent on an attack of scarlet fever in 1854, and his death was caused by uræmia. For two months before his death he had been obliged to relinquish his professional duties.

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ART. I.—*Medicine in the Past, the Present, and the Future.*[1]

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To consider the present in comparison with the past, and in anticipation of the future, is a grand prerogative of the human intellect, as contrasted with the mental endowments of the inferior races of created beings. Man alone brings to bear upon the thoughts and acts of individual life the experience of generations which have passed, and man alone undertakes to foresee the events of generations which are to come. Among the highest, the most attractive, and the most useful of studies, are those which consider the different branches of existing knowledge in their retrospective and prospective relations. A just appreciation of the present state of human progress in science, in art, or in social life, is to be based on a comparison

[1] An Anniversary Discourse before the New York Academy of Medicine, delivered December 10, 1868. The publication of this discourse, nearly three years after it was delivered, calls for an explanation. The writer declined the invitation of the Academy to publish it, because, at that time, he intended to prepare a volume of essays, among which this discourse was to be included. Having neglected to carry out his intention, it is now published in compliance with a request from the editors of the NEW YORK MEDICAL JOURNAL.

of the present with the past, and a rational foresight of developments which are hereafter to mark this progress must rest on the same basis.

With these truisms I introduce the subject of my discourse on this occasion. I shall offer some observations concerning *medicine in the present, the past, and the future.* In announcing a subject of such wide scope, let me make haste to forestall certain apprehensions which it will be likely to awaken, by saying that, as regards the past, my range will extend only to a period within the memory of those who are not among the younger, nor yet among the oldest, of the living members of the medical profession; and, as regards the future, I shall forego indulgence in elaborate prophetic visions. My observations, moreover, will be confined to medicine proper, that is, to medicine in contradistinction to surgery. With these restrictions, a discourse discreetly limited in length can take in but a few of the topics which the subject suggests, and these must be considered in a desultory manner.

Let a physician, whose reminiscences extend to the close of the first quarter of the nineteenth century, take this date as a stand-point, and institute a comparison of the present with the past.

Human anatomy, as regards "gross appearances" (a phrase which, had it then been in use, would have had little significance), offers not many striking points in contrast. The descriptions of organs, in the anatomical treatises then in use, would answer well for the medical student of 1868. Up to that date the term *anatomy* needed no prefixes denoting subdivisions of the study. The names *special* and *descriptive* came into use after the creation of *general anatomy* by Bichat. The student of anatomy, prior to the date of which I am speaking, as compared with the student of the present day, had an easy task. Not only were treatises less portentous in bulk, but their authors by no means adhered to dry anatomical details; the functions of organs were treated of, and the student was diverted with excursions into the fields of medical practice and operative surgery. The analytical study of organs, resolving them into their component tissues, was a memorable epoch in medicine. The voluminous treatise on general anatomy by Bichat has become obsolete; but it gave an impulse and a di-

rection to researches, not alone in pure normal anatomy, but in morbid changes and processes, and paved the way to the more recent developments, with the aid of the microscope, which have added to general anatomy the extensive and fruitful territory of Histology. Histological researches have carried observation beyond the elementary tissues of Bichat to the "anatomical elements" into which these tissues are resolvable. So great and important an advance in this direction has been made within the last few years, that one who has lately entered upon anatomical study must find it difficult to appreciate the enthusiasm which, a little more than thirty years ago, led an eminent medical teacher in our country to say that the "General Anatomy" of Bichat was a "revelation in medicine." But for one whose professional reminiscences extend to the date of the publication of Bichat's works in our language, it is not easy to forego the desire to linger in admiration of the genius and industry which achieved, at the age of thirty-two, the honor of being styled the "father of general anatomy."

The present, thus, in medicine, as compared with the past, dating from the labors of Bichat, is characterized by the acquisition of a vast and important territory in anatomy, extending from the boundaries of the unaided vision over a space the limits of which are yet to be defined. The importance of this new territory relates by no means exclusively to our knowledge of the normal organization of the body, but also to pathological histology and to the bearing of anatomical developments by the microscope on our knowledge of physiological and pathological processes. The progress thus made in anatomy required its disseverance from other departments of medical study, and its subdivision into distinct branches, namely: 1. The description of organs constituting special or descriptive anatomy; 2. The description of the tissues and of the anatomical elements in health, embracing normal histology; 3. The gross and microscopical character of disease, or morbid anatomy, embracing pathological histology. Each of these subdivisions now claims in bibliography separate and voluminous treatises. As an illustration of the contrast, in this point of view, between the present and the past, the French translator of Meckel's Anatomy (the American translation of which appeared in 1831) announces in his preface that this work comprises "all

the important facts of general, descriptive, and pathological anatomy, and of physiology!"

Turning from anatomy to the study of the processes which take place within the body in health and in disease, that is, to physiology and pathology, provinces of medicine conventionally reckoned as distinct, but, in reality, parts of one dominion, and taking the same stand-point, let us briefly notice some contrasts here between the present and the past.

At the end of the first quarter of the present century, the great discovery, by Magendie and Bell, of distinct nervous fibres for sensation and motion, was in the process of adoption, and the discovery of the excito-motor or reflex functions of the nervous system had not been made. Think of the practice of medicine without these discoveries, justly compared, in importance, with the discovery of the circulation of the blood! Beaumont began his experiments in the case of Alexis St. Martin in 1825, and the results were not given to the profession until 1833. Physiologists had concluded that the active agent in digestion was a fluid, because food contained in linen bags, and perforated metallic balls, which animals were made to swallow, was found to be digested, and John Hunter had discovered *post-mortem* digestion of the stomach; but the physical and chemical properties of the gastric juice had not been ascertained, the digestive power of this secretion when removed from the stomach had not been observed, and the comparative digestibility of different articles of diet had not been brought under direct observation. Magendie had entered upon the vivisections, the results of which entitle him to be called the "father of modern experimental physiology," meeting not only distrust and ridicule, both from within and without the profession, but, on the plea of needless cruelty, with an opposition which certain of the pseudo-humanitarians of this day are not ashamed to continue notwithstanding the use of anæsthetics which were unknown in Magendie's time; but the withdrawal of the contents of the alimentary canal, and of the products of internal glands, by means of permanent fistulas, was reserved for a later period. Digestion was supposed to be exclusively a function of the stomach; the digestive power of the intestinal juice, together with the bile and pancreatic secretion, was unknown. The enormous quantity

of fluids secreted for digestion was not dreamed of. Even now it is difficult to realize the statement that the quantity of digestive fluids secreted *per diem* exceeds the whole mass of blood, and equals one-seventh of the weight of the body! Venous absorption was not acknowledged. Little was known of osmosis. The products of digestion were supposed to be taken up exclusively by the lacteals, which, it was imagined, had open mouths endowed with a kind of intelligent faculty of election. The production of excrementitious substances in the tissues, their presence in the blood, the office of certain glands being for their separation, and not for their formation, are facts, having very important bearings on pathology and practice, which have only within late years been demonstrated.

Passing to pathology and practical medicine, classical authorities at the date selected for our comparison of the present with the past were, Gregory's Practice, Thomas's Practice, and the elaborate "Study of Medicine," by John Mason Good. They, whose retrospections extend to the time when the five volumes of Good's "Study of Medicine" were to be read by the medical student, will not have forgotten how agreeable was the task. The comprehensive scope of the work is set forth in the preface, in which the object is stated to be "to unite the different branches of medical science into a general system, so that the whole may be contemplated under a single view and pursued under a common study." "These branches," the author continues, "are the following: 1. Physiology, or the doctrine of the natural action of the living principle; 2. Pathology, or the doctrine of its morbid action; 3. Nosology, or the doctrine of the classification of diseases; 4. Therapeutics, or the doctrine of their treatment and cure." The completeness of the classification, the classical nomenclature, the "physiological proems," the erudition, the interesting episodes and curious incidents, together with the attractive style of composition, rendered this work not less charming than instructive.

There were "Brunonians" in those days; and soon afterward came Broussais, the founder of another sect, undertaking, like Brown, to reduce pathology and practice to a simple formula, both starting from substantially the same theory, but reaching systems of practice diametrically opposite;

one considering all diseases as asthenic, and requiring stimulants, the other recognizing in most affections, whether general or local, either inflammation or over-excitation, and arguing that they are to be combated by depletion and starvation.

Standard works on practical medicine may be taken as exponents of current doctrines in pathology and therapeutics; and, with successive changes in medical opinions, representative works are pretty sure to be forthcoming. Not going beyond British and American medical literature, text-books which supplanted Gregory, Thomas, and Good, were the fascinating and in all respects admirable lectures by Watson, the treatises by Eberle, Hosack, Dunglison, Elliotson, and the "Cyclopædia of Practical Medicine." A quarter of a century is a long life for a text-book in medicine; but "Watson's Practice" has reached this longevity, still retaining not a little of the freshness of youth. At the present time, this province of medical bibliography is occupied by several recent works, whose authors aim to represent, more fully than those just named, the existing state of pathology and practice; and it is to be hoped that henceforward the real progress of medical knowledge may render these works more short-lived than their immediate predecessors. Let us now glance at some of the more important of the changes, pathological and practical, which have taken place during the second and third quarter of the present century.

In this retrospection auscultation first claims notice. Laënnec, it is true, published his great work on mediate auscultation in 1819, and it was translated by Forbes in 1821. Before its publication, a commission, appointed by the Academy of Medicine in Paris (composed of three members whose names are now comparatively unknown), had reported, in substance, that, although this method of exploration was by no means a new discovery, inasmuch as many observers, even Hippocrates, had listened to sounds emanating from the chest, yet, the labors of M. Laënnec were highly creditable, and might prove of practical value! The merits of auscultation were not, in fact, appreciated, save to a very limited extent, for several years after the death of Laënnec in 1826. It is only within the last few years that there have not been many who were

not ashamed to sneer at the stethoscope. In 1836 a writer in a popular magazine said of it, "The toy is a new toy;"[1] and in the same year the Boylston medical committee of Harvard University offered a question for a prize essay in the following terms: "How far are the external means of exploring the condition of the internal organs to be considered useful, and important in medical practice," the successful competitor being Oliver Wendell Holmes. Percussion, the elder brother of Auscultation, the difference in their ages being over half a century, had died almost at birth, and was disinterred by Corvisart in 1808; but it was not really resuscitated until it became associated with auscultation. Need I ask how unsatisfactory would be the practice of medicine were the profession to be deprived of these methods of direct exploration? The use of the speculum was among the "lost arts," and its revival did not take place for many years after auscultation and percussion had come into vogue. The date of the employment of the thermometer in diagnosis and prognosis, together with the laryngoscope and the endoscope, is so recent that these means of direct exploration are now novelties in medical practice.

The labors of Laënnec were preliminary to the successful application of auscultation to the study of cardiac diseases. The disease now known as endocarditis had no place in nosology. Pericarditis was nosologically recognized, but, as regards its diagnosis, Laënnec admitted that its existence could only be guessed at; and as to valvular lesions, knowledge of their situation and character was reserved for autopsical disclosures. Thanks to the researches of Bouillaud, Hope, Stokes, Latham, and others, at this moment no diseases are discriminated with greater promptness and precision than the various affections of the heart. Let the practitioner reflect upon the hiatus in practical medicine were we to be now deprived of the information relating to these diseases which has been acquired since the days of Thomas, Gregory, and Good.

What shall be said of the developments in pathology and practice which had their point of departure in a publication,

[1] *Vide* Prize Essay, by Oliver Wendell Holmes.

in 1827, by Richard Bright, under the unassuming title, "A Report of Medical Cases?" Bright's discovery came at a time when pathologists explained dropsy by saying that it was owing either to increased action of the exhalant, or to diminished action of the absorbent vessels; and when uræmic coma and convulsions were attributed to "cerebral congestion," "erethism of the brain," "sympathetic irritation," and "nervous apoplexy." Imagine our present knowledge of the various affections of the kidney, with their pathological relations, to be obliterated, would it not be like returning to a "dark age" in medicine? and yet, the absence of this knowledge is within the professional recollections of many of the fellows of the New York Academy of Medicine!

The developments in neuro-pathology are in proportion to those relating to the physiology of the nervous system. The practitioners in the beginning of the second quarter of the present century recognized but few of the neuralgic affections as such, considering the visceral neuralgias as inflammatory. They did not undertake to differentiate gastritis, enteritis, and pleuritis, from gastralgia, enteralgia, and pleuralgia. Sciatica and tic douloureux constituted the list of neuralgic affections, the latter being referred, in certain cases, to the portio dura, and this nerve had been sometimes divided as a means of cure. Paralysis, it would seem, could hardly be misinterpreted; yet it is but lately that Duchenne eliminated, from the class of paralytical affections, locomotor ataxia, and that muscular atrophy has taken the place of "creeping palsy."

Finally, the most striking of the points of contrast, in this comparison of the present with the past, may be referred to a better knowledge now than formerly of the natural history of diseases. To consider diseases as entities was a natural transition from the superstitious doctrine which attributed them to the agency of evil spirits. The ontology against which Broussais battled so truculently came in legitimate succession from a demoniacal pathology. Even now it is curious to note the extent to which the language used by medical writers implies the personality of diseases. It is common to apply to them various epithets, such as obstinate, persistent, malignant, rebellious, which denote the passions of

demons and men. It is said that they yield, that they manifest themselves, that they seize upon, attack, or invade parts, and that they have their local expressions, modes of speech, thus imputing to them perception and will. This language, now used metaphorically, represented formerly ontological ideas. The passions, intentions, and volitions attributed to diseases were, for the most part, in opposition to human life. The morbid entities which perceived, felt, and acted, were the vindictive enemies of the human race. The term "heroic," as applied to practitioners and remedies, had its origin, probably, in this imaginary strife for life and death with diseases as if they were intelligent and implacable foes to the existence of man. That the attitude of the "doctor" toward disease should be invariably one of antagonism, is a notion which has prevailed up to a recent date; and this notion is still so fixed in the popular mind that the name *allopathist* is not considered misapplied even by a majority of those who know the derivation of the word. That pathological laws exemplify often a principle of conservatism; that the beneficial hand of Nature, or, to speak more properly, that Divine design is manifested in pathology, as well as in physiology, the study of the natural history of diseases has disclosed in these latter days, and herein is one of the most prominent of the characteristics of the present as compared with the past.

Connected with the modern study of the natural history of diseases is the honored name of one whose labors, in themselves of great value, contributed vastly toward the inauguration of a more exact and complete system of observation than had previously been pursued. Need I say that I refer to Louis, the founder of the so-called "numerical system?" This system consists, *first*, in recording, carefully, fully, and honestly, cases of disease, after having acquired, by cultivation and practice, the difficult art of making and noting observations. To comply with the requirements of this part of the system, in addition to opportunities, leisure, and conscientiousness, the observer must be free from the bias of preconvictions, the pride of opinion, and the prejudices of partisanship. Louis, from the age of thirty-two, devoted seven years to the accumulation of notes of cases, taking no part in the treatment of the cases

which he recorded. The notes which for a time he collected he threw aside, considering that, for a certain period, he was learning how to observe. The system, in the second place, embraces the analysis of a considerable number of recorded cases, properly arranged and classified, and a comparison of them with reference to every thing observed in the living and dead body. The fruits of this system, as applied to the study of two important diseases, by Louis, are the great works on Phthisis, and the "Typhoid Affection"—works which established the history of these diseases on a basis not less valid now than when the works were published, and the validity of which will remain as long as these diseases and the human constitution are unchanged.

Dating from the labors of Louis, the knowledge which has been acquired of the natural history of diseases has affected largely the practice of medicine, in the first place, by developing the fact that many diseases have a definite career, continuing for a certain period, and ending after intrinsic laws of limitation. In this connection mention should be made of a striking and well-timed essay which appeared more than thirty years ago, from the pen of Jacob Bigelow, of Boston, on the self-limited character of certain diseases. This essay did much toward directing the attention of American practitioners to the fact just stated, and the apt name, "self-limited," was first applied to diseases by Bigelow. The knowledge acquired of the laws of self-limitation has had a powerful influence in leading to a discriminating employment of active therapeutical measures for the arrest and abridgment of diseases. It has led practitioners to direct their efforts less to "heroic" remedies addressed to the disease, and more to the maintenance of the vital powers of the patient; and it often affords encouragement, in cases of imminent danger, to persevere in exertions to keep the patient alive until the career of the disease is ended.

In the second place, the study of the natural history of diseases has developed the fact that in many the intrinsic tendency is to end in recovery; and that, not infrequently, certain of the historical events of a disease are conducive to a favorable termination. Take, by way of illustration, pneu-

monia and typhoid fever: it is certain that these diseases do not destroy life *per se*, but that, in fatal cases, death is attributable to either complications, antecedent affections, or unfavorable influences having no necessary connection with the disease. As an example of an event heretofore considered as highly prejudicial, in its supposed influence on the course of the disease, hæmoptysis, in cases of pulmonary tuberculosis, may be cited, the statistical researches of Ware and others having shown that this event is of favorable omen, constituting a ground of encouragement to look for either recovery from, or a slow progress of, the tuberculous affection.

As practical results of a better knowledge of the intrinsic tendencies of diseases, it is now considered that herein often is the explanation of the favorable progress and ending, attributed heretofore incorrectly to therapeutical interference; that active measures of treatment, injudiciously employed, may interfere with events by which recovery is brought about; and that, in abundant instances, is illustrated the truth of an old adage, singularly incongruous with past prevailing practical notions: *Medicus naturæ minister non magister est.* By means of these results, the influence of a better knowledge now than formerly of the natural history of diseases, on the practice of medicine, has been immense.

In the third place, by means of the study of the natural history of diseases, their individuality has been better established; and certain diseases, formerly confounded, have been shown to be distinct. As an example of the latter effect, the individuality of the essential fever now called *typhoid* having been established by the researches of Louis, the fever distinguished as *typhus* has been shown to be a distinct affection, whereas, until within a late period, the two fevers were by many considered as identical.

In the fourth place, in proportion as our knowledge of the natural history of diseases has increased, the relative diagnostic value, generally, of their symptomatic phenomena has been determined; and this, together with new and improved means of exploration, has rendered the discrimination of diseases vastly more prompt and precise than heretofore. It is not uncommon for members of the medical profession to speak

disparagingly of diagnostic skill, as absorbing attention which should be devoted to therapeutics. All are familiar with a saying imputed to some one in the French metropolis, namely, that cases of disease, to be truly satisfactory, must end fatally, because autopsies are essential in order to verify the diagnosis! Let it, however, be borne in mind that, although diagnostic skill may not carry with it the skilful management of diseases, yet therapeutical skill requires the practitioner to be a skilful diagnostician. Let it also be borne in mind that a practitioner can acquire true experience in therapeutics only by correctly discriminating the diseases which he treats. And, again, let it be borne in mind that the therapeutical experience embodied in medical literature is not reliable, but delusive, in proportion as it rests on the contributions of those who are not accurate in diagnosis.

The memoir by Louis, entitled "Researches on the Effects of Bloodletting in some Inflammatory Diseases, and on the Influence of Tartarized Antimony and Vesication in Pneumonitis," which was published first in the *Archives Générales de Médecine*, in 1828, and afterward issued as a *brochure* and republished, with notes by James Jackson, in this country, in 1836, may be considered as a starting-point for the application of statistics to studies in therapeutics. That not a little has been accomplished by the labors of those who have adopted the plan of investigation pursued in that memoir—that is, the numerical system, as applied to therapeutics—cannot be doubted. It has been somewhat the fashion to decry statistics here, as in other applications, on the ground that figures may be forced to uphold errors, and to tell untruths. The same objections may be brought against trust in human testimony, and in the evidence of the senses. Without entering into a discussion of this important topic, which would be here out of place, suffice it to say that while, as must be granted, statistics are liable to be perverted, and in their application to the effects of remedial agencies they are open to error in various directions, it is difficult to see any other basis of exact therapeutical principles. Notwithstanding the many and great difficulties in the way of statistical researches, I would express the conviction that therapeutics, on this basis, may be brought, to a

certain extent, to the condition of an exact science. But, it is to be added, general principles in therapeutics, however exact, must always, in their applications to the treatment of individual cases of disease, call for the exercise of such a degree of judgment and tact, on the part of the practitioner, as to render the practice of medicine, in the highest sense of the term, a rational art.

I must hasten to bring to a close these observations relating to the present and the past. I can only allude, in passing, to points of contrast in medical instruction. There are those here who can go back to the time when, in our medical schools, a winter session of three months was considered sufficiently long —when a teaching faculty consisted of four or five professors, and when a memorable instance occurred, in a New England medical college, of a single professor occupying all the chairs during an entire session; when anatomy and surgery were not infrequently combined in one chair, and when physiology was always an appendage to either anatomy or the practice of medicine. Now, five—and even six—months, for a winter session, is generally considered as inadequate, and summer sessions are coming to be regarded as a necessity; a faculty of even fourteen members is not found to be too redundant, and not only are anatomy, physiology, and surgery, assigned respectively to separate chairs, but several subdivisions of the medical and surgical departments, or specialties, have their professional representatives in some of the leading colleges.

The practice of medicine, since the date to which our present retrospections extend, has undergone great changes, some of the prominent characteristics of which, briefly stated, are as follows: Active remedies and potent therapeutical agencies are employed with much more reserve and discrimination now than formerly. The importance of economizing and sustaining the powers of life, in both acute and chronic affections, or, as I would term it, "conservative medicine," is much more fully appreciated. The physician of the present day is willing to show his heroism by withholding, even in cases of disease involving imminent danger, active treatment, if he do not see clearly the indications for it, acknowledging, as a governing rule, the duty of avoiding risk of doing harm by therapeutical interference.

He is satisfied to admit that, in most cases, his office is to aid in conducting the course of disease to a favorable termination; and he is content with being called an "expectant physician," provided this name be used in its proper signification. The hygienic management, in cases of disease, is much better understood, and its proper rank, as taking precedence, often, over the treatment by drugs, is recognized. Erroneous notions in relation to diet, which formerly prevailed, are passing away, and the necessity of alimentation in disease is far better understood; medicinal preparations are more concentrated, and they are far less nauseous, as well as more efficient; inhalations are employed in the form of anæsthetic vapors, and of medicated spray, and certain remedies are administered by subcutaneous injection.

Now, can it be doubted that the changes, of which these examples are among the most obvious, denote improvement? Will it be denied that the progress of practical medicine, during the present and the preceding quarter of the nineteenth century, has been in proportion to the advancement of our knowledge in anatomy, physiology, pathology, and diagnosis? Is not the ratio of recoveries from acute diseases now larger than heretofore? Do not certain chronic affections, for example, phthisis, end oftener in recovery, and, when a cure is not effected, is not their progress slower, and life accordingly prolonged? Is not recovery from acute diseases more prompt, and the restoration more complete now, than within the memory of some whom I address? I must content myself with asking these questions, assuming that a full discussion of them would substantiate affirmative answers; and, in conclusion, let me ask your attention, for a few moments, to some observations in relation to the future.

Taking as a stand-point in the past a date within the recollections of the older members of the profession, we have seen how great is the contrast with the present in the different branches of medical knowledge. How will it be at a date equally distant in the future, should an orator of this Academy happen then to select as the subject of his discourse a comparison of that day with this present time? The developments which are to come can be seen only by the light

of past experience, and looking forward by this light we can fancy the orator of 1893 presenting numerous illustrations of the imperfections of medical knowledge in 1868; noticing the doctrines of this generation which will then have become obsolete; dilating on the great changes in practice, and citing the comparatively short period which at the present time is devoted to medical pupilage. Should such a foreseeing as this make us dissatisfied with the present state of medicine? Certainly not. All that we can do is to avail ourselves of what is known in our day, as far as practicable, making, as far as lies in our power, a good practical use of the knowledge which we acquire. Thus much we are bound to do; and, also, we are bound, one and all, according to our opportunities and abilities, to aid in the progress of medicine. Is it a just ground of reproach that the history of medicine will be likely to show in the future, as in the past, great changes? To answer this question affirmatively would be to impugn the wisdom of God. It is in the order of Providence that there should be progressive advancement in medicine as in other provinces of science and art; and all that society and individuals can claim of us, as medical practitioners, is the exercise of our art in accordance with the existing state of the science. An appreciation of the limits of our present knowledge of anatomy, physiology, pathology, the natural history of diseases, and therapeutics, will enable us, in some measure, to apprehend the scope which these branches of medicine offer for further progress. Let us contemplate these several branches of medicine, briefly, in this point of view.

It may seem hardly probable, after the study of the body for several years, with the present improved means of microscopical observation, that very important anatomical facts remain to be discovered. Yet, so it seemed at the date in the past which I have selected for a comparison with the present; the *Ultima Thule* of anatomical discoveries was supposed to have been reached when Horner claimed to have discovered the *tensor tarsi* muscle in 1824! It is by no means improbable that the range of minute observation may be extended by means which cannot now be foreseen. Who could have guessed, a few years since, that substances composing the sun

and stars would be brought within the compass of direct observation; yet, by means of the spectrum analysis, this wonderful result has been accomplished. It would therefore be unwise to assume that the boundaries of our present knowledge constitute the utmost attainable limits of anatomical research.

Physiology, taking advantage of the microscope and of new developments in chemical science, interrogating Nature by means of experimental observations on inferior animals, and deriving information from the study of disease, opens to the imagination an illimitable space for future progress. With all that has been acquired within the last half-century, how limited is the extent of our actual knowledge! The forces which are involved in the circulation of the blood, independently of the heart's action, are not determined; here is now ample room for discussions and different conjectures. The processes of assimilation, nutrition, secretion, and excretion, constitute still a *terra incognita*. Granting the establishment of the hypothesis which attributes these processes to the action of cells, these are only the agents or organs, the mechanism or *rationale* remaining to be discovered. The functions of the spleen and the other ductless glands are still undetermined. The purposes of the various parts composing the encephalon are very imperfectly known, and the physiological actions involved in sensation, volition, reflex movements, and mental operations, are beyond our present apprehension. The abolition of consciousness in sleep, and the conditions for its existence in waking hours, are mysteries which we cannot begin to comprehend. But it is not necessary to go to the most exalted parts of the organism; let the physiologist undertake to explain the functions of a purely vital organ, for example, the rhythmical actions of the heart, and the limits of our knowledge are not less strikingly illustrated. What will be the physiology of the future no one can surmise, but it is certain that in this direction we have but just begun to penetrate the arcana of Nature.

Turning to pathology, the mysteries relating to morbid processes must needs correspond to those pertaining to the processes of health. What a flood of light, doubtless, would illumine the processes involved in inflammation, morbid prod-

ucts, abnormal growths and alterations of structure, were the physiologist able to unfold the secrets of assimilation, circulation, and nutrition! At present, we must be content with the facts and laws which have been determined by observation, canvassing the merits of theories (like the so-called "cellular pathology") which aim to extend our vision somewhat beyond the horizon bounding our actual knowledge.

Etiology furnishes striking examples of the narrow limits of our present knowledge; and here especially important developments may be looked for in the future. Of certain of the extrinsic special causes of disease, we are entirely ignorant, namely, the miasmas which produce malarious fever, yellow fever, cerebro-spinal meningitis, influenza, epidemic cholera, etc. It has sometimes seemed that we were within grasp of new and important truths; and at this moment such is the conviction of those who believe that organic entities derived from without the body are to be discovered in the blood. One cannot but fervently wish that late efforts to demonstrate the correctness of the doctrine of the animalcular or cryptogamic origin of certain diseases may prove successful, so important would be the consequences of such an advance in etiology. On the other hand, if the zymotic theory of certain diseases be substantiated, much is to be hoped for when our chemical brethren have elucidated the phenomena of catalysis—a name which now seems to serve the same purpose as the phrase "Nature's abhorrence of a vacuum," before the pressure of the atmosphere was understood. Whatever be the nature and sources of the external morbific causes which are now unknown, it is highly probable that discoveries in this direction, sooner or later, will effect great changes in pathology and therapeutics. Reference was made in a former part of this discourse to the knowledge of uræmia acquired within late years. We have an inkling already of other intrinsic causes, namely, uricæmia, cholesteræmia, lacticæmia (if I may coin such a word), and septicæmia. We may consider it quite certain that, with respect to the presence in the blood of morbific principles, produced within and derived from without the body, information is hereafter to be acquired which will

bring into striking contrast medicine in the present and the future.

Our present knowledge of the natural history of diseases is very far from complete. Here is ample scope for useful labor. The harvest is abundant, but the laborers are few. It is painful to think of the limited extent to which, in this direction, are utilized the immense clinical resources of this metropolis. If a score of the younger members of the profession in this country, whom Providence has blessed with the means of devoting time to the work, were to follow the example of Louis, they would render to medicine an incalculable service, at the same time securing for themselves a measure of attainment and a professional position which should satisfy a reasonable ambition. A sure career of usefulness and honor is here open to any who, properly qualified by education and practice, and having the requisite intellectual and moral qualifications, are able and willing to spend a series of years in, first, recording cases of disease, and, second, subjecting the accumulated histories to careful analysis and comparison.

What shall be said of the therapeutics of the future? How will the practitioners, at the close of the nineteenth century, treat their patients? What will be the characteristics, on the one hand, of "Young Physic," and, on the other hand, of "Old Fogyism," in that day? It is too much of a flight of the imagination to try to read the future in these aspects; but, judging prospectively from the past, we may indulge in some reflections. It may be reasonably expected that new remedies will be added to the materia medica, for some of those now considered most valuable (e. g., bromine and the bromide salts, the sulphites, the permanganates, and carbolic acid) are of recent introduction. It is fair to conclude that improvements in the preparation and administration of remedies will continue to be made. Statistical researches will have effected more or less progress in the establishment of general principles relating to the management of different diseases. It is not irrational to suppose that our knowledge of the *modus operandi* of many remedies will be hereafter much better understood. A logical inference from the well-known tendency of the mind to opposite extremes at different periods

is, that remedies and therapeutic agencies formerly in vogue, but which are now rarely employed, will hereafter come to be more in use. To my mind, for example, it is not a preposterous supposition that our successors, at the end of the present century, will carry lancets; that venesection will not lapse among the "lost arts," but that dexterity in this operation will again resume its former place among the practical accomplishments of the physician. It may be found that injustice to mercury is involved in the insignificant *rôle* which it now has, as compared with the important part assigned to it heretofore in the treatment of many diseases.

These reflections might be multiplied and extended, but I promised, at the outset, not to indulge in elaborate prophetic visions. Let it not be said that speculations respecting the future are vain and fruitless. Reasonable expectations of continued progress will prevent an undue pertinacity of adherence to doctrines to which the mind is once committed, thus saving us from "old fogyism," or from becoming "monumental physicians"—that is, from representing in opinions and practice, not the present, but the past. Such expectations conduce to a state of mind desirable with respect to an aptitude for the acknowledgment of new truth of any kind, more especially if it be of importance in its practical bearing; a state admirably expressed by a quotation which will be familiar to some of my hearers, and which I introduce in this connection with becoming reverence, namely, "a happy mean between too much stiffness in refusing, and too much easiness in admitting, variations in things once advisedly established."[1]

Finally, the consideration of medicine, in the present, past, and future, leads to the reflection that diseases have been appointed by a Divine Providence, for purposes which human reason can now but imperfectly fathom. At some distant period in the world's history, or, if not in this world, in another life, the finite understanding may be able to comprehend fully the wisdom and beneficence which are doubtless exemplified here, not less than in all else affecting human life and happiness. Then it will be seen that the progress made

[1] Preface to Book of Common Prayer of the Protestant Episcopal Church of the United States of America.

by successive generations, in the science and art of medicine, is in conformity with a plan which can only be understood by knowing the purposes for which diseases have been appointed.

ART. II.—*Carbolic Acid as an Anti-zymotic in Puerperal Diseases.* By J. D. TRASK, M. D., Astoria, L. I.

THE value of carbolic acid as a means of arresting decomposition has become fully established, and it is much resorted to for the correction of unhealthy discharges, and for the prevention thereby of the septicæmia which might result from their absorption; I do not remember, however, to have seen it recommended for the purpose of arresting the progress of blood-contamination after it has once been set up within the system. Having recently had the opportunity of administering it with that intent, and with apparent advantage, I take the opportunity of presenting to the profession a few of the leading facts of the case.

Mrs. E., aged twenty-five years, of very slight figure, and highly-nervous temperament, had been confined to her room during twelve months from "inflammation of the womb with retroversion," and passed from under medical treatment two years ago. She married, and on the 29th of April of the present year, when at the eighth month of pregnancy, she had a show with pains in the back, and slight hæmorrhage, which continued for several days, she being nervous and feeble.

May 22d.—Labor-pains came on. There had been constant dribbling of the waters for several days, and the membranes were found ruptured, and the uterus contracted closely about the child. She was delivered at 9.30 A. M., after nine hours' labor. The perinæum, tense and cord-like, gave way, and a portion of the sphincter was torn. Sutures were at once introduced deep, embracing the entire rent.

There had been unusual tenderness over the uterus for days before delivery, and during the application of the bandage there was intolerance of the least pressure. Beyond this

there was nothing untoward until the evening of the 24th, when a slight chill occurred. On the morning of the 25th she was seized with a rigor, which was represented as of very great severity, followed by intensely high febrile action, alternating through the day with oft-recurring chills of short duration. I was prevented from seeing her until four o'clock in the afternoon. At that time there were great heat, profuse sweating, pulse 160, extreme restlessness, and increased tenderness over the region of the uterus, and in the right iliac fossa. There had been urgent diarrhœa, which yet continued, the dejections being involuntary and of intolerable odor. The lochia were suppressed. There was not only no nausea, but a craving for food. Taking into consideration her experience before labor set in, I could not but feel that there was a positive septic condition of the system in connection with symptoms of peritonitis, and it occurred to me to attempt to impregnate the system as far as possible with carbolic acid. Its administration by the mouth, rectum, and vagina was at once commenced. A half-drop of Calvert's solution was given in mucilage by the mouth every two hours. The solution for the rectum was one drop increased to five drops to an ounce of mucilage, a half-gill being thrown up after every dejection. The vaginal injection was not less than five drops to the ounce every three or four hours; the vagina, in my experience, being more tolerant than the rectum of the first impression of the acid. There was at the time a supposed idiosyncrasy forbidding the use of opium.

Within twenty-four hours the diarrhœa ceased. The pulse was reduced to 120. There was still exquisite tenderness over the uterus, and great thirst. The inflammatory symptoms were henceforth in the ascendant, and the signs of septicæmia, although recognized in different degrees of distinctness, were in abeyance. The system seemed to be saturated with carbolic acid. She tasted it in every thing, inhaled it, as she thought, in every breath (I cannot say that she *exhaled* it), and was so disgusted that she refused to have it longer brought near the bed for any purpose. No other antiseptic was substituted by the mouth, but the bisulphate of lime or the permanganate of potash was employed abundantly in vaginal injections until convalescence began.

By the 29th tenderness had almost disappeared, but the skin was still hot and dry; there was delirium at night; the urine scanty; still great craving for food; involution of the uterus apparently not begun.

June 1st.—Her aspect was much worse. There was dorsal decubitus with knees drawn up, area of tenderness increased, irritability of the bladder and rectum, some diarrhœa, and that offensive, and a great deal of tympanitis. There was urgent desire for food, and constant tendency to reject it in small quantities from the mouth. The pulse was 140; respiration 40; temperature 106.5°. A large blister was applied to the abdomen, and its beneficial effects in reducing tenderness were very marked: the pulse fell to 120. It became necessary to withdraw the urine by the catheter.

June 2d.—Countenance in repose haggard and anxious; respiration 40; the pulse 128, a mere thread; surface covered with cool moisture from head to foot. The process of involution had made no perceptible advance; the lochia consisted chiefly of a light-colored, sanious mucus; the tongue red and tremulous; the urine now copious.

Dr. B. Fordyce Barker saw her on this day, and expressed the conviction that within three or four days she would sink. This was based upon a consideration of the state of the pulse, and the evidences of metritis, peritonitis, and septicæmia, in the light of cases of a similar character which he had seen.

She was at this time taking beef-tea and milk-punch freely. It was found on trial of the aqueous tincture of opium with bromide of potassium, and afterward of opium alone, that she could take it advantageously for relief of the irritation of the bladder and occasional diarrhœa. The urine examined at this date was found to abound in granular casts, and to be highly albuminous. She could not be convinced that she was seriously sick, much less that she might not recover, but was determined at any rate to get well.

By the 5th the urine deposited blood-corpuscles in large quantities, but there was much less albumen. The uterus was sensibly diminished in size.

June 7th.—For three mornings there has been a slight rigor, followed by a degree of reaction; the lochia profuse,

and very offensive when antiseptics are intermitted; is constantly hungry, but can take only fluid nourishment, and in small quantities; pulse 120; respiration 20; temperature 99°.

June 8th.—Increased fever; pulse 160; urine of the 7th abounds in pus and epithelium, with a few casts.

June 12th.—Surface cool to touch and moist; temperature 101.5°; involution sensibly progressing; tympanitis continues.

June 18th.—Tenderness only on firm pressure; uterus not to be felt above the pubes.

June 27th.—Cystitis renewed with great severity; the exciting cause was evidently the misconduct, for two or three days, of the wet-nurse. Mental excitement always produces irritability of her bladder in health.

July 7th.—She got an attack of pleuritis with effusion.

July 9th.—For four days there had been headache and absolute loathing of food. She woke on the 9th, crying out for something to eat, and found that her menstrual flow had come on.

July 21st.—The suffering from cystitis has been protracted and severe; the urine most of the time being very turbid with pus and mucus, and constantly alkaline. She is at present able to sit up for a half-hour, and but for the cystitis her convalescence would have been much more advanced. To-day I find the uterus much enlarged, anteverted, and fixed in its position by lymph thrown out anteriorly, posteriorly, and laterally, during the progress of peritonitis in the pelvis. The roof of the pelvis is a plane of induration, with the uterus implanted in the centre. In a recumbent position she suffers from uterine tenesmus, and from a sense of falling of the viscera of the pelvis in standing up.

August 7th.—Enjoyed a ride in a carriage.

In this meagre abstract of the notes of this case it will be seen that pelvic peritonitis probably existed to a certain degree before labor; after being confined to the pelvis for several days it invaded additional portions of the peritonæum through a considerable portion of the abdomen. But, apart from the symptoms due to peritonitis, there was throughout the case another class that could be attributed only to blood-poisoning. The profuse and highly-offensive diarrhœa,

which occurred unconsciously to the patient, accompanying the violent rigors, cannot well be explained on other grounds than the introduction into the system of a septic agent, which produced this great disturbing influence. Later in the case, when the peritonitis had subsided, the influence of this subtle agent could be recognized in the slight rigor and exacerbation of almost daily occurrence, and in a very peculiar odor of the cutaneous secretions, which was so persistent as to attach itself to the fingers for hours.

If any consider the symptoms related as evidences of nothing more than puerperal peritonitis, I refer to the fact that my opinion was confirmed by Dr. Barker, whose opportunities for studying puerperal diseases have been rarely excelled by those of any observer.

Now, if it be asked of what use was the carbolic acid if the septicæmia continued in *any* degree after its employment ceased, I would suggest that it is not unreasonable to assume that the first charge of poison which the blood received was neutralized by the carbolic acid, and that by the persistent subsequent employment of antiseptic injections any further impregnation of the system in any considerable degree was prevented. During the twenty-four hours of its administration six drops were taken into the stomach and at least sixty drops brought in contact with the vaginal and rectal mucous membranes; doubtless no inconsiderable portion of the latter was absorbed into the circulation.

The readiness with which carbolic acid may be taken up by mucous membranes was first suggested to me by the fact that a patient, to whose endometrium it had been applied, spoke almost immediately afterward of tasting the carbolic acid in the mouth. In using it in the present instance as an injection into the rectum, apart from its antiseptic influence, I had much confidence in its ability to moderate the diarrhœa by its sedative influence. The anæsthetic influence of a weak solution in burns is now pretty well known to the profession. Its value for allaying rectal tenesmus is not, I apprehend, so generally appreciated. In irritations about the anus, combined with glycerine and a mineral astringent, it is invaluable, and in dysentery I have found it capable of affording great relief

when dissolved in mucilage. The susceptibility to its use varies in different persons. When thrown into the rectum, I generally commence with a solution of one drop of Calvert's solution to the ounce, increasing the strength if necessary, until a feeling of decided warmth is produced by its administration, and this is followed by local anæsthesia.

Since writing the above, I have seen in the *American Journal of Medical Sciences* for July, 1871, p. 152, that carbolic acid was administered internally by Dr. James H. Hutchinson, of Philadelphia, in a case of pyæmia. Commencing with a single drop, the dose was gradually increased to four and a half drops a day, which was well borne. Though the medicine, becoming nauseous and irritating, was discontinued, much improvement followed its administration.

It would seem that the cutaneous surface might be called into requisition as the medium for introducing this agent into the system. I have a memorandum of three cases of itch, quoted in the *Boston Journal of Chemistry* of December, 1868, taken from the *British Medical Journal*, in which the parts were dressed with carbolic acid, and symptoms of poisoning ensued, consisting of smarting pain at the point of application, headache, and coma. Two of the patients actually died, and the third was rallied only after considerable effort. The acid used was that known as Calvert's solution, and about six ounces were employed upon the three cases. An average of fl. ʒ ij of Calvert's solution, which, in the absence of positive knowledge, I have regarded as the liquefied crystals, was used upon the surface of each of these patients. It is difficult to understand how one familiar with the properties of this agent could have resorted to its use in such an inconsiderate manner; but, while serving as a warning against its reckless employment, these cases ought not to discourage attempts to ascertain the limits within which its employment is safe.

From an article quoted by the *American Journal of Medical Sciences*, July, 1870, from the *British Medical Journal*, April 30, 1870, it would appear that the external employment of carbolic acid requires to be studied apart from its internal administration. The writer states that numerous observers have noticed certain special symptoms follow the ap

plication of carbolic acid to the skin. The most constant of these is *black* urine, and "it has been noticed over and over again." In slight cases of this condition of the urine there appeared to be no constitutional symptoms, "but, in the more severe, vomiting, delirium, and even tendency to coma may be induced. . . . A weak watery solution freely used appears to involve the most risk, and some believe that with oil there is but little, and in the form of plaster none!" Of course these points of inquiry are of great interest in reference to the external use of this agent with whatever intent it be employed, whether as a local application or possibly with a view to its absorption into the system with the object in view which I have suggested.

In this connection I would call attention to the bisulphite of lime as a deodorizer. The excess of sulphurous acid, passing into the atmosphere, comes directly in contact with the offensively odorous particles that have escaped, and at once destroys them. In giving vent to collections of decomposing purulent matter, as in the peritoneal or pleural cavity or in chronic abscesses, cloths wet with this preparation held near the orifice almost entirely prevent the escape into the room of the offensive smell, to the great relief of patient and bystanders. Though the strong solution will destroy fabrics, when properly diluted, as when used for vaginal injections, it neither destroys nor discolors bed-linen.

Note.—In the *American Medical Journal*, July, 1871, quoted from the *Practitioner* of January, 1871, mentio nis made of the practice of Mr. John Wood, Professor of Surgery in King's College, London: "In some cases of pyæmic poisoning, and also as a prophylactic agent after operations, the *vapor* of carbolic acid, evolved constantly under and retained by the bed-coverings," has been used for some time past. A disinfecting powder containing carbolic acid is employed, in muslin bags suspended under the clothing, and sprinkled freely on the floor.

ART. III.—*Urinary Calculus in China.* By J. G. KERR, M. D., Canton, China.

THE prevalence of diseases which afflict the human family in various nations is a subject of deep interest to the physician who seeks to learn the causes and cure of such maladies.

The tabular statements below will show the existence of stone in the bladder in Southern China, where it is confined almost entirely to the province of Canton. It is a remarkable fact that the disease is not known to exist in any other part of this vast empire. Missionary hospitals, attended by thousands of patients, have been established for more than twenty years in Ningpo and Shanghai, but not a single case of urinary calculus has been met with in either place. Missionary hospitals have been in operation in Peking, in the northern part, and in Han-kow, in the central part of the empire, for eight or ten years, and no cases have been met with in either of those places. In the southern part of the island of Formosa, which is on the same latitude as Canton, a few cases have been met with, and two or three operations performed.

In Fuchow, the capital of the province of the same name, adjoining Canton Province on the east, one or two cases have been seen. In Amoy, a seaport of the same province, westward of the capital, no cases have been reported. In Swatow, in the extreme east of Canton Province, and near the line between it and Fuchow, one or two cases have been seen, but no operations have been performed in either of the three places. Why the disease should be so common in the South of China, on latitude 23½°, and entirely absent in the central and northern parts, is a curious question, not easy to be answered satisfactorily.

The cases operated on in the Medical Missionary Society's Hospital in Canton have come from twenty-four districts (a district embraces about the same extent of territory as a county in the United States). The city of Canton is situated in two districts. One of these, Pwan-yii, furnished thirty-one cases, and the other, Nan-hai, forty-five cases. Southeast of Canton, and joining Pwan-yii, is the district of Tung-kun, which supplied forty-seven cases. These three districts have

been the source of more than half the cases here reported. The majority of the remaining cases have come from districts lying to the east or west of Canton, only a few of them coming from a northerly direction. About three-fourths have come from within a distance of seventy-five miles from Canton. A single case came from the adjoining province on the west, a distance of two hundred and fifty miles.

The first operation for stone in the bladder performed in China was in 1844, by the Rev. P. Parker, M. D., the founder of the Medical Missionary Society, and now a resident of Washington, D. C. From that time to 1853 about thirty-seven cases were operated on by him. Cases have been operated on by Drs. Dickson, Dods, Blanc, Carmichael, and Wong. Dr. Blanc was stationed in Canton as surgeon of the Fifth Regiment of Bombay Native Infantry, during the occupation of the city by the British and French in 1858–'59. He was afterward one of the Abyssinian captives.

The cases referred to in this paper begin with the year 1856, and the following statement will show the increasing number who applied for relief year by year, as it became known that relief was possible.

The number of cases operated on in		1856	was 3
(In 1857–'58 the hospital was closed by war with England and France.)			
The number of cases operated on in		1859	was 2
"	"	1860	" 10
"	"	1861	" 12
"	"	1862	" 4
"	"	1863	" 13
"	"	1864	" 12
"	"	1865	" 17
"	"	1866	" 18
"	"	1867	" 20
"	"	1868	" 24
"	"	1869	" 35
"	"	1870	" 49

It is not my purpose to give, in this paper, a history of the operations performed during these years. In most of the cases there was nothing worthy of note. In a few, incidents occurred noticeable at the time, but of no special interest to the profession.

The following tables contain a condensed statement of the operations, exhibiting the ages of the patients, and the results at the different periods of life:

Lithotomy.

Under 10 years				19	operations	1	death.
10 years and under			20	46	"	3	"
20 "	"		30	33	"	2	"
30 "	"		40	40	"	4	"
40 "	"		50	22	"	2	"
50 "	"		60	21	"	4	"
60 "	"		70	5	"	2	"
70 "	"		80	1	"	1	"
		Total		187		19	

Lithotrity.

20 years to			30	4	operations	0	deaths.
30 "	"		40	8	"	2	"
40 "	"		50	5	"	0	"
50 "	"		60	5	"	0	"
60 "	"		70	5	"	1	"
70 "	"		80	3	"	0	"
		Total		30		3	

The ordinary lateral operation with the scalpel has been performed in most of the lithotomy cases. Generally the incision has not been extensive, and reliance has been placed on dilatation. In one or two cases the median operation has been resorted to.

Sir Henry Thompson's lithotrite, made by Weiss, has been used in most of the lithotrity cases, and it seems to be as nearly perfect in its adaptations to the purpose required as it is possible for an instrument to be.

The Chinese generally prefer to submit to lithotomy, because more time is required in the crushing process, and some patients undergoing lithotrity have left before the operation was completed.

Thirty-seven of the lithotomy cases were operated on by Dr. F. Wong, a Chinese physician educated in Monson, Mass., and in Edinburgh. He is the only Chinese who has performed the operation.

It may be expected that one who has had so much experience in the operation for stone in the bladder will have

something to add to the general stock of knowledge on the subject. I propose to make a few suggestions, but, as I have not access, in this distant part of the world, to large medical libraries, what I have to offer may not be new.

The first suggestion I make is as to the mode of stopping hæmorrhage after lithotomy. The plan I use has never failed to arrest the hæmorrhage immediately. It consists simply in placing a tampon in the rectum, and retaining it there for six, twelve, or eighteen hours. A flat female catheter is at the same time placed in the wound, to allow the urine to pass away. My patients have not found any great inconvenience from it, and it has seldom been necessary to give opium to relieve tenesmus. In a single case, I found it necessary to make manual pressure for some hours with the tampon against the pubic arch. This plan is greatly preferable to the one recommended in the books, of plugging up the wound.

Another suggestion I have to make is as to the mode of removing large stones. The hospital of which I have charge is the only one for all the region (with a population of perhaps 10,000,000) where this disease occurs, and many of those afflicted do not know of its existence until years of suffering have passed. I must therefore be prepared for the removal of large stones. I have a powerful pair of forceps, made by Weiss, with a screw-power in the handles, designed for crushing large stones, but I have never ventured to make a hole in a man large enough to use them. Indeed, an opening large enough to admit them would allow of the exit of any stone small enough to be seized by them.

After much reflection on the subject, I have come to the conclusion that the proper way to break large stones is to work from the centre to the circumference, and not in the opposite direction, as is the practice laid down in all the books. The problem is, to get a large stone out at an opening no larger than is required for a medium-sized stone. A single case, of several operated on by me, will show the process I adopt, as follows:

Case No. 214 was operated on November 17, 1870. The patient was forty years old, a strong, healthy man. The ordinary lateral incision was made, and, unexpectedly, the stone

was found to be very large. It was seized with a pair of forceps, and a hole drilled in it with a common drill. Pieces of the stone were broken off with a pair of necrosis forceps, and with a chisel and mallet. The drilling and breaking continued for about one hour and a half, at the end of which time the whole was removed, and the bladder syringed out. The stone was unusually hard, hence, the long time required to break it up.

The patient was under the influence of chloroform. The weight of the fragments was seven ounces and four drachms. The patient made a good recovery, and has been seen by me several times since in excellent health.

I labored under great inconvenience from the want of suitable instruments. The straight handles of the forceps with which I held the stone were constantly in the way of the drill or chisel. What is required is a light pair of forceps, that will occupy little space, just strong enough to hold the stone while drilling, and with the handles so bent as not to interfere with the drill. This latter instrument should be an ordinary drill to be held in the hand, so that its direction and the force with which it is applied can be under control. It might be enclosed in a shield with a spiral spring, so as to keep the end of the shield constantly on the stone, and thus protect the soft parts.

The operation described above may be considered very rough surgery, but, however that may be, it was successful in five cases; and I am disposed to lay down the proposition that where a *large* stone has formed in the bladder, without giving rise to severe local disease, or great general derangement of health, the bladder has attained a tolerance for the foreign body, and will tolerate a very considerable amount of rough handling in removing it.

There has been much discussion in the medical journals as to the mode of making the incision for the extraction of large stones, and much ingenuity used in devising bilateral, semicircular, and other forms for the incisions. My experience has satisfied me that all this discussion amounts to nothing. Learned surgeons have resorted to it in default of any thing else novel to bring before their classes. The ordinary lateral

incision is the one which commands the approval of the vast majority of surgeons. If large stones can be safely reduced to a small size in the mode I have adopted, then all powerful instruments and complicated incisions may be discarded. With a very few simple instruments, the work of breaking up may be done; with improved instruments, such as the skill of our manufacturers can produce, the dangers of injury to the tissues may be avoided, and the removal of large stones may become no more dangerous (though still more difficult) than that of small ones.

ART. IV.—*The Value of Circumcision as a Hygienic and Therapeutic Measure.* By M. J. MOSES, M. D., New York.

SOME time ago, in one of the Jewish periodicals, an article appeared, condemning the practice of confiding the operation of circumcision to persons who, entirely ignorant of the first principles of anatomy or surgery, yet perform the act under dispensation from a religious sect.

While the intention of the writer was, to impress upon the Israelitish community the necessity of having their children attended to by surgeons, many have accepted the article, and the exposition of the danger incurred by the children, as an argument against the "barbarity" of an "old prejudice," and adduce it as a strong reason for urging the abrogation of a ceremonial rite, the origin of which is coeval with the earliest civilization, and the value of which has borne the criticism of ages, and the tacit sanction of science, in almost every age and country.

The occurrence of "an accident," a few days ago, in the hands of a medical gentleman of this city, has done much toward confirming these dissenters in their opinions; and therefore, as an Israelite, I desire to ventilate the subject, and, as a physician, have chosen the medium of a medical journal, that I may not be trammelled in my expressions, as I necessarily would be were I confined to the pages of an ordinary paper.

There is an ordinance (the divine origin of which I do not propose to discuss) which directs that all male children born must undergo the ceremony of circumcision on the eighth day. Let us look upon this as a human law, and, so viewing it, let us ask, and answer, the following questions:

1. What is the value of the operation, without reference to special lesions?

2. Is the operation a painful one?

3. The statistical proportion of accidents?

4. The cause of these accidents?

5. What special diseased conditions are frequently due to a neglect of the ordinance?

From time immemorial medical men have been consulted by parents, and desired to prescribe for children whose haggard faces and extreme nervous irritability have caused them alarm and anxiety. The practised eye of the surgeon sees beyond the veil which shadows the case, and recognizes the ravages which the solitary vice is making upon the nervous system of the little sufferer.

Examination of the case most frequently reveals a long, contracted, and irritated prepuce, the presence of which accounts for the initial cause of the trouble. A removal of this appendage exposes a cold, blue, congested glans, behind the corona of which, firmly packed, is a ridge of fetid sebaceous matter; and, unless the vice has been too deeply impressed by long-continued habit, the devil is at once exorcised, and the child gets well. "An ounce of *prevention* is worth a pound of cure."

I refer to masturbation as *one* of the effects of a long prepuce; not that this vice is entirely absent in those who have undergone circumcision, though I never saw an instance in a Jewish child of very tender years, except as the result of association with children whose covered glans have naturally impelled them to the habit.

Cleanliness, without doubt, is the key to health, and it stands to reason that, even in the most normally-formed prepuce, attention to this condition, to say the least, is more apt to be neglected than when, after the carefully-performed

operation of circumcision, the glans is easily reached, and the secretions removed.

The second question is easily answered. If the operation is well and skilfully done, it is one involving but slight suffering, as can be attested by the fact that I have operated upon sleeping children, who only awakened at the first incision, relapsing into a tranquil slumber during the completion of the operation.

To the third question I need only refer to the records of the late Dr. Abrahams, who probably did the operation oftener than any one of his time, and who on his visit to the Holy Land, I think, offered the best testimony of success, in depositing several thousand foreskins in the shrines at Jerusalem. I never heard of a death among his cases, and, if any resulted, I suppose they bore so trifling a percentage to his successful issues, that they are lost.

Dr. Abrahams's experiences are in themselves statistics satisfactory.

The accidents liable to complicate circumcision are hæmorrhagé and tetanus. Tetanus is *very* rare, and, like the same disease from other causes, is very fatal. The occurrence of hæmorrhage is much more frequent, and happens oftener as the result of neglect than mere accident.

Though accident may complicate *any* operation, even when every precaution has been taken to guard against misfortune, yet, of course, the occurrence is much more liable to happen when *no* care has been taken, than when every avenue to danger has been guarded. Circumcision is an operation of the simplest nature, and the mutilations we often see are no more necessary than is amputation of the forearm, for the cure of a diseased finger-nail.

The object of the ceremony, as ordered in the Mosaic code, is to liberate the glans from its close mucous covering, by dividing the muco-dermoid fold, near its point of juncture. To do this, the sacrifice of some *little* tissue is necessary, but so little, in fact, as to be scarcely appreciable.

The operation, as performed by rabbinical appointees, frequently involves the loss of *too much* tissue, often thus compromising considerably large vessels, which frequently accounts for secondary hæmorrhage.

The dermoid tissue is very elastic, and, when the muco-dermoid fold is divided, a *natural* contraction carries it back behind the glans, leaving the mucous covering *in situ*. This covering is split up on the dorsal aspect of the glans, and turned back, so that its reflected edge is brought into approximation with the dermoid tissue behind.

In this way we have secured the following results, without the loss of much substance, viz.: the liberation of the glans, with but the loss of a few drops of blood; the avoidance of injury to the frænum; and the saving of a sufficient redundancy of tissue to permit the erection of the organ without tension.

In the infant eight days old, when assimilation and growth are in their greatest activity, the process of cicatrization is rapid, thirty-six hours sufficing as an average time to complete union in the approximate edges. I have seen cicatrization complete in twenty-four hours. It is now the mistake which causes the much-dreaded hæmorrhage is made, for the gentlemen "who do these things" have a traditional amount of bandage which they apply, keeping the wound warm, while surgery teaches that, until plastic lymph, which incepts the healing process, has been exuded, the occurrence of hæmorrhage is encouraged and coagulation of lymph retarded by a high temperature.

The hæmorrhage having been thus *invited*, the child is left to the care of a nurse, who does not look for danger until the pallid little face induces her to examine if every thing is right. Every thing being found *wrong*, alarm, consternation, and confusion, usurp the place of reason, and allow the child to die, when a little calm, quiet common-sense would master the difficulty. By observing the following plan, all danger may be considered as provided against, and need *never* occur, if the surgeon watch his case properly:

1. The amount of tissue sacrificed should be only *just enough* to divide the muco-dermoid junction.

2. The reflected mucous membrane should be carefully adjusted to the cut edge of the dermoid fold.

3. The frænum should *not* be wounded nor lacerated.

4. The wound should be kept open until active bleeding ceases, and the effused lymph has glazed on the line of approximation.

5. The dressing should be the ordinary cold-water dressing, made of very fine linen, *lightly* applied.

6. The surgeon should visit his patient and renew the dressing two hours after the operation.

7. A careful and attentive nurse, duly warned as to any possible accident, should watch the dressing from minute to minute. The dressing of cold water should be exchanged for one of soft oiled linen the morning following the operation.

9. As soon as the healing has well begun, all dressing should be discarded, and the parts bathed in tepid water after each voidance of urine.

10. The operation should be done by a *surgeon*, and the condition of the child, as to his ability to undergo the ordeal, submitted to his direction.

To guard against hæmorrhage, even under these circumstances, a reliable styptic, tannin, Monsel's iron, pulv. matico, punk, cobweb, the so-called alum-iron, charpie, etc., should be left with those who are charged with the care of the child, with careful directions as to how, and under what circumstances, it is to be applied.

Having spoken of the hygienic value of the operation, and described the true surgical method of doing it, and guarding from danger, we now come to the consideration of the fifth question.

Phymosis and paraphymosis are due to the possession of a prepuce; and many surgeons, while laboring to give relief to some afflicted youth, have been only second to the sufferer in wishing the "thing off."

Venereal contact is ten times more liable to inoculate the unfortunate possessor of this appendage, and in cases of this kind, especially where the ulcer appears near or on that portion of the prepuce attached to the frænum, permanent contraction of the preputial opening results, retarding treatment, and ultimately rendering operation absolutely necessary.

Balanitis and herpes are very often the abnormal conditions of the glans, where the prepuce is the irritating cause.

Retention of urine from spasmodic stricture is frequently the penalty of possessing a prepuce, and I have seen cases where I could not trace a permanent stricture of the urethra

behind the fossa navicularis to any cause but the constant pressure of the prepuce upon the glans, bending the urethra back upon itself at the point named.

Nocturnal pollutions, and resulting spermatorrhœa, are frequently superinduced from an irritating pressure upon the glans.

In 1868 I operated upon twelve or thirteen cases in adults, liberating in some instances incarcerated glans, and relieving nervous irritability, amounting to absolute mania.

This was before I read Prof. Lewis A. Sayre's pamphlet,[1] which I believe is the first paper calling the attention of medical men to a special class of spinal irritation resulting from constricted prepuces.

I will here report a case of recent occurrence in my practice, which is typical of this class of cases, the history of which may open a new road to the discovery of a cause in many cases of trismus nascentium.

On the 10th of last November I delivered a lady of this city of a well-formed male child, at full term. The mother being attacked by puerperal fever, the child was fed by the bottle, and subsequently a wet-nurse was procured. The baby did not thrive, every one noticing how very "nervous" he was. At about eight weeks old, it was noticed that he had a habit of pushing his head backward, often sleeping with the muscles of the back of the neck quite stiff, inclining to opisthotonos. It was also observed that he did not pass urine as frequently as other children, the bladder requiring to be very much distended before evacuation occurred.

At the end of a week more, after starting in his sleep a great many times, and awakening with a scream, insensibility, attended by clonic spasm, supervened. When I was called to see the child, I found that the urine had not been passed for twenty-four hours. Warm fomentations and baths succeeded in inducing the flow of urine, and the child recovered, but was left with an acute hyperæsthesia of the whole body, and a spasmodic contraction of one of his legs. So marked were his complaints when this leg was touched, that I examined the

[1] Transactions of the American Medical Association for 1870.

limb carefully, thinking that possibly a needle had accidentally entered it. While examining the leg, I was induced to look at the penis, and *there* I saw a solution of the difficulty. The foreskin was short, and tightly constricted, pressing the penis almost back to the pubes. The preputial opening was puffy and irritated, and not on a direct line with the meatus. I stated my views to the father of the child, and suggested an operation. The father (an Israelite, by-the-way) objected, on the ground of "barbarity," and it was not until several other spasms had occurred, and my opinions had been sustained by consultation, that his *reluctant* consent was obtained.

The operation was done in the presence and with the assistance of Dr. Bell, of St. Mark's Place, and in twenty-four hours all dressings were removed, the wound having advanced well toward cicatrization. From the œdema, always accompanying the operation, a slight amount of pressure remained upon the glans, and another spasm occurred the next day. Since then, only one very slight convulsion, lasting a few seconds, has happened. The child is improved in every respect, the nervousness and hyperæsthesia being relieved, and his neck now being held almost naturally.

I found the meatus as Dr. Sayre found those he reports, puffy and red, and presenting the appearance of a granular urethritis; the glans cold and blue. Since the operation, scarcely two weeks ago, the glans looks nearly normal, and the organ has increased almost to twice the size it was before.

I am convinced that the Jews of the enlightened (?) school are inaugurating a dangerous reform, in this desire to invade the hitherto inviolability of this law; and I would impress upon my professional brethren, of other creeds, the necessity of explaining to their Jewish patrons the value and *safety* of maintaining circumcision, if not as a religious duty, as a hygienic measure, the importance of which probably influenced its institution as a ceremonial law.

ART. V.—*On Some Forms of Inflammation of the Cornea.* By CHARLES L. BULL, M. D., New York.

IT is universally admitted that the mere fact of the presence of blood-vessels in the cornea is not sufficient to enable us to make a delicate diagnosis of the inflammatory process, its situation, extent, and consequences. To do this we must learn to distinguish between the different kinds of corneal injection and their several situations; whether they exist singly or together. In a vascularized cornea, there may exist and generally be distinguished three different strata of vessels:

1. Superficial vessels, occurring in all forms of pannus, which are branches or prolongations of a pathological vascularization, arising from an abnormal union between the anterior and posterior conjunctival vessels.

2. The middle corneal vessels, which are direct prolongations of the anterior conjunctival vessels, and are always present in inflammatory affections of the corneal parenchyma. This form of injection with transverse inosculations, projecting but a short distance from the border of the cornea, is always seen in the stage of decline of a phlyctenular inflammation. This appearance must not, however, be confounded with "phlyctenular pannus," in which the vessels form the well-known knob-shaped prominences near the corneal periphery. Both varieties occur in Arlt's form of scrofulous keratitis.d

3. The deep corneal vessels, which cannot be followed beyond the periphery of the organ, but seem suddenly to be cut off in their course.

As is well known, there are two general forms of inflammation of the cornea, under which the various affections may be classified, viz.:

1. Circumscribed keratitis, always appearing as a limited opacity in the cornea, and subdivided into several varieties. It is always an acute affection, and very often causes necrosis of the corneal tissue.

2. Diffuse keratitis, which from the beginning appears as a diffuse opacity over the entire cornea. It runs its course slowly and is not very amenable to treatment, but it has little tendency to necrosis or ulceration.

We are not, however, always able rigidly to classify our cases. A diffuse form may become circumscribed, or the two forms may exist simultaneously in consequence of an unsuitable course of treatment having been resorted to. Again, a circumscribed form may become diffuse by the extension of the surrounding or limiting ridge or "court" of the ulcer, and by a coalescence or running together of several "courts." Circumscribed keratitis, occurring in old persons, is almost certain to be complicated with iritis and often hypopium, although the latter is not a dangerous symptom, as in cases of purulent infiltration of the cornea.

It is a peculiarity of fresh corneal opacities that they diminish the power of vision very much in proportion to the intensity of the opacity. There is a peculiar form of opacity, called by Von Graefe[1] the "band-shaped" keratitis, of which he gives the following description: "From opposite borders of the cornea proceed inward toward the centre, generally in the horizontal meridian, broad, band-shaped, grayish-white, punctate opacities, from 1‴ to 1½‴ in breadth, of a peculiarly dull appearance, accompanied by or else preceding chronic iritis, closure of the pupil, calcification of the lens, atrophy of the globe, or even glaucomatous increased tension. The opacity is usually somewhat more intense on one side than the other, and the superior and inferior segments of the cornea are left free." For a certain length of time the disease is confined to the cornea, but after some weeks or months, occasionally even years, the globe becomes hard, posterior synechiæ appear, diminution of the acuteness of vision, and glaucomatous symptoms, manifest themselves. Later in the course of the disease the lens becomes cataractous, and even calcareous. The affection is extremely insidious throughout its whole course, and the early symptoms rarely excite any suspicions in the mind of the patient until the vision begins to be affected. While the process is confined to the cornea, its progress is exceedingly slow, so that it is difficult to determine whether the opacity really increases in density. As the cornea becomes more opaque, the suspicion is awakened that the deposit is of an inorganic nature, as if some metallic salt had been employed,

[1] A. Von Graefe, Archiv für Ophthalmologie, xv., p. 3, 139.

and been precipitated in the corneal tissue. Whether the affection always occurs in both eyes simultaneously is not determined as yet, since a sufficiently large number of cases have not yet been observed. In the first stage of the affection, an ophthalmoscopic examination reveals normal media and fundus. Later the pupil reacts very slowly, and the papilla begins to show signs of excavation from intra-ocular pressure. The pupil in time resists all attempts at producing mydriasis, the iris becomes discolored, the aqueous humor grows cloudy, and complete posterior synechiæ are formed. Now the intra-ocular pressure is increased, the anterior chamber becomes very shallow, and a secondary glaucoma is fully established. The question may now be asked, whether the glaucomatous process may not be the primary disease, producing the keratitis as a secondary affection. It is true that many affections of the cornea are caused in consequence of anæsthesia of the part existing in glaucoma; but neither a circumscribed keratitis nor a calcified deposit is ever found as a consequence of a glaucomatous process. The treatment in these cases is to perform an iridectomy as soon as possible, with the object of preventing the corneal inflammation from proceeding any further, and also as a means of prophylaxis against the glaucomatous process. It is especially important that the operation be performed at as early a stage as possible, otherwise the posterior synechiæ may render doubtful the good results to be expected. Von Graefe[1] says that, in every case in which a successful iridectomy was performed, a very favorable result was gained, both as regards the intra-ocular pressure and also the course of the inflammation. Turning from this plastic form of corneal inflammation, we come now to consider the purulent form of inflammation or infiltration, and of this kind we find there are three varieties, viz.:

1. A simple circumscribed infiltration of the corneal tissue, uncomplicated by any other trouble, unless, it may be, by some affection of the conjunctiva. It is an ulcer of the cornea, occurring sometimes at the centre, more often at the limbus, generally superficial in character, and very rarely progressing to ulceration. It may be connected with a phlyc-

[1] Von Graefe, *op. cit.*

tenular disease of the conjunctiva, or it may have a traumatic origin, or it may occur spontaneously. Its edges are usually sharp, and its base dull and grayish, and, when the reparative action commences, the base clears up, and the edges become rounded and reflect the light in a marked manner, owing to the edges being segments of a convex surface, while the base is concave. Instillation of atropine is usually all that is necessary locally, with strict attention to diet and cleanliness, and a patch may be worn over the eye, as a means of protection against wind and dust, but all pressure should, as a rule, be avoided.

2. The second variety is characterized by the infiltration spreading somewhat phagedenically; it is of a yellowish hue, and is ordinarily accompanied by hypopium, and occasionally by purulent iritis. To this variety belongs the "ulcus corneæ serpens" of Saemisch,[1] who describes it as an ulcerative form of keratitis, having a tendency to spread upon the superficies, particularly in one direction, whence results its danger. Simultaneously with this tendency to superficial spreading, the destructive action goes on to involve the deeper structures. The disease has been known under several names, among which the "phagedenic corneal ulcer" and "hypopium-keratitis" are most usually employed. The disease commences generally in the centre of the cornea. The signs of irritation are at first but slightly pronounced, and the disturbance in vision first calls the patient's attention to his condition. We notice at first a circular, grayish opacity of the cornea, followed soon by a slight loss of substance. The characteristic mark of the ulcer is a swelling and gray discoloration of about one-half of the edge, having the form of a half-moon. The bottom of the ulcer is grayish, uneven, covered with detritus, and always sloping toward the swollen border. The adjacent portions of the cornea are generally transparent, or at most but little changed. The process spreads slowly in one direction, involving the healthy corneal tissue, and at the same time strikes deeper. The bottom of the ulcer becomes cloudier, more detritus is cast off, and the dangers of perfora-

[1] Th. Saemisch, Das Ulcus Corneæ serpens und seine Therapie. Bonn, 1870.

tion, formation of staphyloma and "phthisis bulbi," are imminent. As the case advances, pus makes its appearance in the anterior chamber, which may come from three sources, viz.: from the ulcer itself, owing to perforation; from the membrane of Descemet; or from the iris. When the disease has a favorable termination, a leucoma results, generally very extensive, sometimes complicated with anterior synechiæ. The prognosis is always a doubtful one, since up to this time we have been rarely successful in putting a stop to the process. As regards treatment, almost every thing within our scope has been employed—antiphlogistics, irritant applications, paracentesis, iridectomy, atropine, and firm and long-continued pressure—but with rarely a favorable result. Saemisch has lately employed a means which in his hands has proved extraordinarily successful, since, in thirty-five cases of the affection, he succeeded in saving the eye in all but one, of course with a very varying amount of vision, dependent upon the extent of the opacity; and in a number of them vision was much improved by a subsequent iridectomy. His operation consists in splitting the cornea, generally in the horizontal plane, through the ulcer, entering the point of Von Graefe's narrow cataract-knife in the healthy corneal tissue on one side of the ulcer, and bringing the point out in healthy tissue upon the other side, thus including the whole ulcerative process in the incision. The dangers of wounding the iris or lens are but slight, and by a steady hand may easily be avoided. This incision is then to be kept open until the ulcer shows signs of reparative action, by introducing twice a day between the lips of the wound the point of a probe, or of a Weber's knife very carefully so as to avoid wounding the lens. In making the incision, care should be taken to make the necessary sawing motion very slowly, otherwise the aqueous humor would flow out too rapidly, and might cause intra-ocular hæmorrhages. Atropine may be instilled every few hours, and a patch worn over the eye, but no bandage should be employed.

To this same second form of purulent infiltration belongs a peculiar variety of the diffuse form of keratitis, called by Von Graefe the "ring-shaped" keratitis. This is, however,

different from the diffuse keratitis which has its seat in the centre of the cornea, and leaves the periphery clear for a long time. This form commences at some point on the periphery and spreads in a circle, sometimes involving the centre of the cornea, more often leaving it intact, steadily progressing, eating deeper and deeper into the substance of the cornea, and thus forming a ditch or furrow around the periphery. According to Von Graefe, this ring-like inflammation is the result of many small infiltrations and ulcerations appearing in the course of a simple inflammatory condition of the cornea. In the course of the disease hypopium may appear, having its source either in the membrane of Descemet, or in the iris, or more rarely in the ciliary body. In this form of disease quinine is strongly indicated. If a constant severe pain be present, apply leeches to the temples and darken the room, but do not resort to venesection. Locally we may use atropine and a bandage, and occasionally lukewarm camomile-poultices. The prognosis is unfavorable, as the disease is difficult to check, and, even when a favorable result has been obtained, a considerable opacity remains, which, however, may be remedied by performing a subsequent iridectomy.

3. The third variety is where the infiltration neither extends nor recedes, but keeps up irritation, shows a tendency to perforate, and is often very obstinate in resisting treatment. The cause is very frequently a traumatic one, particularly among stone-cutters, masons, and mechanics. A small piece of metal or stone strikes the cornea, and, instead of flying back or penetrating the eye, remains embedded in the cornea. Irritation is immediately set up, the spot becomes opaque, and, without spreading, there still results a general slight haziness of the whole cornea. Very few vessels can be distinguished; the whole process is a torpid one, but the irritation is intense, the lachrymation is profuse, and there is great photophobia. Paracentesis sometimes does good, and iridectomy may occasionally succeed in subduing the violent symptoms. But the foreign body still keeps up the irritation, and should be removed. This can be done most safely by transfixing the cornea behind the ulcer and then picking the foreign body out with a flat needle, like a keratonyxis-needle, against the

blade of the narrow cataract-knife of Von Graefe used in transfixion, as a background. Even after the foreign body has been removed, the ulcer sometimes shows no intention to take on reparative action—the irritation is still kept up, and the only resource left seems to be enucleation.

In cases of spontaneous origin, where perforation is imminent, Von Graefe recommended a paracentesis of the cornea through the bottom of the ulcer, for the purpose of relieving the intra-ocular pressure. I think it is, however, better to make the paracentesis at the periphery of the cornea, as there is here less danger of a prolapse of the iris, and, the puncture being made through healthy corneal tissue, we are less likely to cause a permanent fistula. If the ulcer perforates of itself, the opening is never properly closed by a cicatrix; or, if it be, the scar is very opaque. The great thing to be desired is, to perform the operation at the right moment; better too early than too late. An iridectomy would be the correct thing, if the ulcer did not show signs of perforating, and yet resisted all other means of treatment.

There is still another form of deposit upon the cornea, which, though not in itself a primary affection of the cornea, has yet received the name of *keratitis punctata*. The distinguishing features are the small, punctate opacities, which are situated upon the posterior surface of the membrane of Descemet. They may be of any shape and assume any direction. Many dissimilar appearances have received this name, even the most superficial ones. Such punctate deposits are always the consequence of an iritis. The affection has been described as a *descemetitis*, and in reality the opacities are in the epithelial cells of this membrane. By ancient writers it received the name of *agno-capsulitis*, because they believed the membrane of Descemet to be a closed sac, covering the posterior surface of the cornea, both surfaces of the iris, and the anterior surface of the vitreous humor. They also observed that an inflammation of the anterior membrane was frequently followed by an inflammation and liquefaction of the vitreous humor, and by suppurative choroiditis. An ordinary plastic iritis has no tendency to propagate itself to the choroid, but in serous iritis with clouding of the aqueous

humor, and a precipitate upon the posterior surface of the cornea, a choroiditis is very apt to supervene, followed by inflammation of the vitreous humor, and detachment of the retina. In such a case the disease is to be regarded as an irido-choroiditis, the choroidal inflammation being usually secondary, though both tissues may be affected simultaneously.

In some of these cases which commence as iritis serosa, the eyes have a tendency to increased intra-ocular tension, and later on in the disease become softer than normal, and it is in just such cases that secondary glaucoma is apt to follow.

As regards treatment, atropine is indispensable. Mercurials make the matter worse when iritis serosa is the primary cause. Counter-irritation of the skin by blisters or setons should be used constantly. Puncture of the anterior chamber is indispensable in all serous inflammations. If synechiæ exist, an iridectomy must be performed.

Clinical Records from Private and Hospital Practice.

I.—*Oxygen in Diseases of the Lungs.* By Henry N. Read, M. D., House-Surgeon, Long Island College Hospital.

The cases reported in this paper are taken from observations extended over about a year's time, during which period oxygen gas has been used in the Long Island College Hospital, and include cases of phthisis pulmonalis, pneumonia—acute and chronic—and chronic bronchitis. Only those cases have been reported in which the gas was used regularly, and for a sufficient time to warrant the drawing of a conclusion as to its effects; and a large number of cases in which the patients left a short time after commencing its use, or in which the observations were not sufficiently accurate, have been thrown out:

Case I.—Bernard Fratus, aged thirty-four; Portugal; sailor; admitted July 19, 1870. Was admitted to surgical wards for anal fistula, but in a short time was transferred to the medical side for trouble with his lungs. History: Nine months ago he caught cold, which was followed by cough,

bloody expectoration, pain in side, etc.; was in bed only a few days, and then resumed duty on shipboard; from that time, however, he has had a constant cough, with expectoration of thick mucus, but has had no hæmoptysis; has lost flesh and appetite. Physical examination gives dulness at base of right lung, mucous *râles*, increased vocal resonance, bronchial breathing, etc. Has hectic and night sweats; temperature ranging from 100° to 101°; pulse, 100 to 105. Gives no family history of consumption. Ord. ol. morrh., with three gals. gas, daily; generous diet. Weight 128 pounds.

August 10th.—No improvement manifest except in regard to appetite; temperature as at last record; night-sweats continue; treatment continued.

August 26th.—Marked improvement. Night-sweats disappearing; temperature averages from 98° to 99°; has gained 4 pounds in weight. Ord. one additional gal. of gas, making 4 gals. in all daily.

September 29th.—During last month there has been a steady improvement. The expectoration, which was at first copious, has almost entirely disappeared; the *râles* are no longer heard in the lung, and the respiration is almost normal. Weight 136 pounds. Appetite continues excellent.

October 19th.—Patient discharged to-day, and goes to sea again. Weight 139 pounds—a gain of 11 pounds. Feels as strong as ever, and has no cough.

Case II.—Jas. Mulligan, aged twenty-six; Ireland; sailor; admitted September 8, 1870. Patient gives history of hereditary tuberculosis; has lost several relatives from consumption. He has had cough for ten months, with the characteristic yellow sputa; has had hæmoptysis several times; is much emaciated, weak, and sallow; the general tuberculous "habit" strongly marked. On examination a cavity is detected at the apex of the left lung; amphoric breathing, with the cracked-pot sound, very marked. Anorexia, hectic, etc. Was ord. ol. morrh.; four gals. gas, daily, also the free use of whiskey, with milk and nutritious food. Weight 133 pounds.

October 16th.—Patient's condition slightly better, but no marked improvement; has better appetite and less hectic; still coughs badly; average temperature, 99½°; pulse, 100. No perceptible change in the physical signs.

December 2d.—Apparently much better; has gained six pounds in weight; night-sweats have disappeared; has a good appetite; temperature 99°; pulse 90 to 92 average; cough still troublesome. Ord. the following *mistura tussis:*

℞.	Chloral hydrat.	ʒ ss.
	Liqu. opii comp.	ʒ ij.
	Syr. Tolut.	℥ iss.
	Aq. q. s. ad	℥ iv.

M. Sig. teaspoonful, pro re nata.

February 1st.—Not so well as at last record; has lost four pounds in weight. Pulse and temperature the same; cough better. Suffers from nausea; bowels constipated. Ord. porridge for breakfast, and a laxative pill after dinner. Same treatment continued.

March 5th.—Has improved steadily the last month. Is stronger than at any time since his admission, and takes a great deal of exercise. Has gained five pounds in weight. Physical signs show improved condition of the lung, and the cavity is quite empty. Treatment continued.

April 1st.—Continues to improve.

May 14th.—Patient discharged to-day, and returned to work; but is advised not to go to sea again. Weight 147 pounds. Strength and general condition very good. Cavity still empty, and no abnormal sounds heard beyond the cavernous breathing, and puerile respiration in healthy portions of the lung.

Case III.—Thomas Hughes, aged twenty-nine; Ireland; sailor; admitted September 8, 1870. On admission right lung was found dull on percussion at apex, dulness extending as far down as fourth rib; bronchial breathing, voice-sounds increased; mucous *râles*, etc. Has considerable aphonia, anorexia, and hectic. Has had cough and expectoration for three months, but hæmorrhage has never occurred. Inherits the tubercular diathesis. Weight 134 pounds. Pulse 95. Temperature 98½° to 99°. Ord. ol. morrh.; four gals. gas, daily; good diet, etc.

October 12th.—Some improvements; cough much less troublesome, and expectoration less. Has a good appetite, and has gained one pound. Pulse 98 to 100. Temperature 99° to 99½°.

December 20th.—Has had one or two slight hæmoptyses, and has sharp pains through right side; otherwise, a little better.

March 5, 1871.—During the winter months, the patient got alternately better and worse; no very decisive alteration taking place either way. In the month of January the gas was increased to six gals., and the oil to ℥ iij, *per diem;* but, producing no corresponding change, were reduced to the original quantity. At present the physical signs are not so marked as formerly, and the cough is almost well, but he has lost four pounds in weight.

April 1st.—A decided improvement manifest since last record; has gained three pounds; pulse and temperature normal.

May 17th.—Strength and condition of patient very favorable, *râles* disappearing from lung; and the respiration, though exaggerated, is not bronchial; signs of consolidation have almost disappeared. Weight 136 pounds. Does work about the hospital, and is in a condition to be discharged.

Case IV.—William Dan, aged forty-eight; Denmark; printer; admitted November 5, 1870. Been affected with cough and copious expectoration of yellow mucus for the last four months; is extremely emaciated and weak, and has exhaustive night-sweats; has had several hæmoptyses. A large cavity detected in apex of left lung, also slight tuberculous deposit in upper portion of right lung. His father died from consumption. Weight 116 pounds. Temperature 101°. Pulse 105. Ord. ol. morrh. with four gals. gas daily, and good diet.

December 17th.—Decided improvement. All bad symptoms have abated. Weight 125 pounds.

March 1, 1871.—For the last two months the patient has been declining; an exhaustive colliquative diarrhœa supervened, which resisted all attempts to check it. The quantity of gas was doubled, but, owing to the development of unpleasant effects, was discontinued. He has lost all the flesh he gained, and five pounds besides. Weight 112 pounds.

April 3d.—Worse. Both lungs hopelessly involved, and the constant expectoration, night-sweats, and diarrhœa, are wearing the patient out. Has lost two pounds more.

May 15*th.*—Patient evidently sinking, is treated at present only in reference to his symptoms.

The result in this case was unfavorable; a decided apparent improvement, for the first month or six weeks, was followed by a steady decline, tubercles rapidly developing throughout the whole of the right lung, which was, at admission, only slightly affected. A thorough trial of the gas was made, assisted by all the usual remedies, but it proved in this case inadequate to check the disease, and, at the present writing, the patient can apparently live but a short time.—The case was analogous to Cases II. and III., the diathesis being hereditary in all, but the disease was much farther advanced at the date of admission.

Case V.—George Graham, aged forty-three; Scotland; sailor; admitted December 2, 1870. Has had cough and expectoration, beginning six weeks ago; has anorexia, hectic, night-sweats, and has lost much flesh, is quite weak. Gives family history of tuberculosis. Right lung dull at apex, dulness extending down to third rib; bronchial breathing, subcrepitant *râles*, etc. Pulse 98; temperature 99½°; weight 146 pounds. Ord. three gals. gas, and ol. morrh., daily.

December 23*d.*—Patient has improved in many respects, has gained ten pounds in weight; pulse and temperature, normal; has an excellent appetite, and but slight cough.

January 12, 1871.—Continues to improve; has gained four pounds since last record; had slight hæmoptysis last week; no night-sweats, and but little cough. Is anxious to be discharged.

February 1*st.*—Patient discharged to-day, and went back to his ship. Weight 164 pounds—a gain of 18 pounds since admission. The diseased lung has resumed its function, and little or no deposit remaining can now be recognized.

Case VI.—Jane Davis, aged forty-eight; England; seamstress; admitted January 7, 1871. Was attacked with pneumonia about six weeks since; was confined to bed for three weeks. She has continued to cough ever since, and spits large quantities of dirty, offensive matter. Has exhaustive night-sweats, no appetite, stomach irritable, and is very weak. Base of right lung dull over a considerable ex-

tent, with subcrepitant *râles* heard over lower lobe. Has been a healthy woman all her life, and has, so far as can be learned, no hereditary taint. Was ord. two gals. gas, daily, with quin. sulph. grs. ij, acid. sulph. arom. gtt. xx. *ter die;* nutritious diet.

January 13*th.*—Began to improve soon after taking the gas. *Eats heartily*, expectorates freely, and the lung is evidently clearing up. No night-sweats, and nausea has disappeared.

January 26*th.*—Discharged to-day entirely well. Sounds in lung, normal. Strength and appetite as good as usual.

Case VII.—Martin McCarty, aged thirty-two; Ireland; tailor. Admitted January 2, 1871. Has lost several of his family from consumption. Has enjoyed good health, with the exception of syphilis, which he contracted three years ago. Four months since he commenced to cough and expectorate yellow sputa; this has continued to the present time, and he has had two free hæmorrhages. He is quite thin of flesh and weak; has hectic and is very anæmic. Tongue slightly coated, bowels constipated, stomach irritable. Weight 106 pounds. Pulse 102; temperature 100° to 100½°; apex of right lung dull as far as third rib, with bronchial breathing and bronchophony, but few *râles.* Ordered two gallons of gas, morning and evening, ol. morrh. Bowels to be regulated *pro re nata.*

January 26*th.*—Has gained four pounds in weight; night-sweats have left him, but he continues to expectorate freely; appetite good; complains of slight rheumatic pains.

February 6*th.*—A severe attack of tertiary syphilis has manifested itself; violent osteocopic pains, and nodes have appeared on tibiæ and sternum. Ol. morrh. stopped. Ordered potas. iodid. ℈j *ter die*, and the following ℞: syr. ferri hypophosph., syr. calcis hypophosph., syr.potas. hypophosph., āā, ℥j. M. S. ʒj after meals. Gas continued, with nutritious food.

February 18*th.*—Specific trouble been apparently arrested. Potas. iodid. stopped. Continued syr. of hypophosphites. Much better; weight, 115½ pounds; dulness of lung, much less extended; voice-sounds and respiration, much less intensified. Ol. morrh. resumed, gas continued.

March 1*st.*—Discharged to-day; weight 120 pounds. Re-

turned to his work. Examination of the lung shows it nearly normal.

Case VIII.—Michael Dougherty, aged fifty; Ireland; stone-mason. Admitted January 7, 1871. His father died from consumption. Has been a healthy man till last summer, when he had an attack of sunstroke; on recovering, a cough set in, with hæmorrhage from the lungs. Has continued to cough and lose flesh; is very weak; has anorexia, hectic, etc. Examination shows a large cavity in apex of right lung, gurgling *râles* heard, lung solidified to a considerable extent. Ordered four gallons gas daily, ol. morrh., and good diet. Pulse 118; temperature 102°. Weight 129 pounds.

February 6th.—But little change except in pulse and temperature, both of which have been reduced, former to 100 to 105, latter 100° to 100½°.

February 17th.—Has improved somewhat, better appetite; pulse and temperature nearly normal. Physical signs show the cavity empty, and but few mucous râles. He has, however, lost one pound in weight and coughs freely; no night-sweats.

February 25th.—Patient left hospital to-day, and returned home. Has lost two pounds in weight since admission; weight 127 pounds. With this exception he has improved; has a good appetite and no hectic. The cavity in lung is empty, and the lung is clearer than formerly, though much deposit is still present, and he coughs considerably.

Case IX.—John Sundin, aged twenty-one; Sweden; sailor. Admitted January 16, 1871. Inherits the *tuberculous diathesis.* Has had cough, more or less, for three years, but it has only excited alarm within this last three months. He has been rapidly reduced within this time, has diarrhœa, night-sweats, etc. Temperature 101°; pulse 106; weight 130 pounds. Cavity in right lung nearly filled with fluid; the whole substance of this lung appears diseased, and a slight tuberculous deposit is detected in apex of left lung. Ordered four gallons gas daily, with ol. morrh., and the usual diet.

January 25th.—Slight improvement. Temperature averages 98½°. Has gained one pound in weight.

February 6th.—Is discovered to have stricture of the urethra, with trouble in passing water; diarrhœa checked; gained two pounds in weight since last record; appetite good.

February 25th.—Physical signs show right lung to be improving, cavernous breathing not so marked, but the deposit is apparently increasing in left lung; cough also very bad, and has copious night-sweats.—Ordered two additional gallons gas daily; *mist. tussis* of Case II.; quinia and acid. The passage of the bougie disturbs him so that it is discontinued; stricture admits of a No. 7 instrument. Weight 134 pounds.

March 18th.—Patient left hospital to-day to return home. Right lung continued to improve, but the left became seriously implicated, and he expectorates profusely. Weight 134 pounds—a gain of four pounds; but he is weak and unable to work, and, on the whole, the treatment has not been satisfactory in this case.

It will be seen that the results in Cases VIII. and IX. were unfavorable. Though the general health of both patients was much improved, and their lives in all probability prolonged, yet the disease was not arrested, nor was the prognosis, at the time of their departure, favorable. The advanced state of the disease in these cases was an unfavorable element, as was the age in Case VIII., and the existence of urethral stricture in IX.

Case X.—James Davis, aged thirty-three, United States; sailor. Admitted January 14, 1871. Attacked with pneumonia three weeks ago while at sea, and was confined to bed. The inflammation involves the lower and middle lobes of right lung, and is now evidently undergoing resolution; subcrepitant *râles* heard; percussion dull; continues to spit rusty sputa; is quite weak, and sweats profusely. Family history clear from all taint, and he has been a strong, healthy man all his life. Weight 147 pounds.—Ordered two gallons gas, daily; quin. sulph. grs. ij, four times, daily, with generous diet.

February 16th.—Inflammation manifests a tendency to become *chronic;* still sweats considerably; has sharp pains through side, and has gained no flesh, though appetite is better. Ordered two additional gallons gas, daily; quinia continued; counter-irritation over diseased lung.

March 10th.—Patient improving. Weight 161 pounds. Sweats have disappeared, and he coughs very little. Lung clearing up; only a slight dulness, with exaggerated respiratory murmur at base.

March 21*st.*—Discharged to-day. Weight 168 pounds. Shipped again. Examination shows right lung entirely clear.

Case XI.—Martin Spelman, aged twenty-six; Ireland; laborer. Admitted January 17, 1871. Was attacked ten days ago with pneumonia, partial, of both lungs; has cough, rusty sputa, pain in side, etc. Is very weak; pulse 136, and very labored respiration; temperature 104°. Dulness on percussion at the bases of both lungs, with crepitant and subcrepitant *râles* heard above.—Ordered two gallons gas morning and evening, quinia and *supporting* treatment.

January 19*th.*—Much better; the gas has relieved the difficult breathing very much. Pulse 106; temperature 101°.

February 10*th.*—Patient improved rapidly since last note; lungs quite clear, except slightly-exaggerated respiration at the bases, with subcrepitant *râles.* The weight was not obtained, as the patient was too sick on admission to be taken out; he is, however, in excellent condition and appearance. Discharged to-day.

Case XII.—Michael Wallace, aged twenty-six; Ireland; laborer. Admitted January 18, 1871. No history of hereditary tuberculosis. Was taken with cough and expectoration about a year ago, after considerable exposure. Had a hæmorrhage last May, none since. Has lost much flesh; anorexia, night-sweats, etc. Temperature 102½°; pulse 102. Right lung dull at apex; dulness extending to middle lobe behind, but not so far in front; the usual voice and respiratory sounds found. Weight 136 pounds. Ordered three gallons gas, daily, with ol. morrh. and good diet.

January 30*th.*—Improving; temperature, 99° to 100½. Cough still troublesome; expectorates freely. Has a good appetite, and has gained four pounds in weight. Ordered the *mist. tussis* of Case II., and one gallon more of gas, daily, making four gallons in all.

February 15*th.*—Improving rapidly; weight 143 pounds; temperature 99°. Cough much better, and lung clearing up; dulness only found at apex. Treatment continued.

February 25*th.*—Discharged to-day. Says he "feels as well as ever." Lung quite clear. Weight 156 pounds—a gain of twenty pounds since admission.

Case XIII.—John Maurice, aged twenty-two; United States; carman; admitted January 28, 1871. Has always been a strong, healthy man; no family history of tuberculosis. Three months ago was attacked with slight hæmoptysis, followed by cough, expectoration, loss of flesh and appetite. Has night-sweats and hectic; temperature 100°. Pulse nearly normal. Weight 138 pounds. Right lung gives usual signs of tubercular deposit at apex. Ordered four gallons gas, daily, with ol. morrh.; usual diet.

February 12*th*.—Commenced improving immediately after taking the gas; has gained two pounds. Coughs considerably. Lung much clearer; local subcrepitant *râles* detected; feels quite strong, and has good appetite.

February 26th.—Discharged to-day, and returns to his occupation. Lung quite sound on examination; is free from cough. Weight 147 pounds.

Result in Cases XII. and XIII. favorable. The absence of all *hereditary* taint and marks of "the hereditary consumptive"—the flat chest, incurvated nails, etc.—together with the general condition and appearance of the patients, renders it probable that the disease commenced in both cases as a pneumonic inflammation, the products of which, not being resolved, underwent caseous degeneration, and furnished the starting-point of the subsequent phthisis. The rapid recovery also strengthens this conclusion, the powers of the gas being especially marked in these cases.

Case XIV.—Fritz Hanson, aged thirty-three; Sweden; sailor; admitted January 28, 1871. Three years ago had an attack of bronchitis, which was not attended to, and, going to sea before getting well, the affection has become chronic. Dry and moist *râles* of all kinds heard over both lungs, and the peculiar wheeze of chronic bronchitis. Cough very troublesome, especially at night; is much worn by his complaint, and has no appetite. Blood is badly aerated, and there is slight emphysema of both lungs. Ordered two gallons gas, morning and night, ol. morrh. ℥ ss, twice daily, and *mist. tussis* of Case II. Weight 133 pounds.

February 16*th*.—Improving; circulation much better, and has a good appetite. Cod-liver oil creates great nausea, and was stopped to-day. Cough still very bad. Gas continued.

March 9th.—Improving very fast; lungs are in a much better state. Cough much better. Weight 145 pounds. Gas continued. Spends most of his time out-of-doors.

April 8th.—Discharged to-day, and went to sea again. Weight 145 pounds, same as at last record. Lungs healthy, except the slight emphysematous condition mentioned; no cough.

Case XV.—James Green, aged twenty-three; United States; sailor; admitted February 4, 1871. Has lost two of his family "from some disease of the lungs." Was taken with cough a year ago, since which time he has had several hæmoptyses; the cough was not severe till a month ago, nor was he compelled to quit work till the present time. Within the last month, however, he has rapidly declined, is extremely emaciated, very weak, has exhausting night-sweats, and almost complete aphonia. Right lung gives all the physical signs of advanced tubercular deposit. Pulse 100 to 105; temperature 101°. Weight 116 pounds. Ordered three gallons gas, daily, ol. morrh., and the usual diet.

February 25th.—Has lost two pounds in weight; no appetite; temperature 101° to 101½°; pulse 100. Coughs less, and sleeps better. Ordered one more gallon gas, making four gallons in all.

March 9th.—Slight general improvement, but no gain in weight; has a little better appetite, and sleeps well. Pulse and temperature as at last record. Night-sweats continue. Ordered quinine and acid; oil and gas continued.

March 22d.—Is getting worse. On further examination, the *left* lung is found more or less consolidated at apex; no normal respiratory sounds heard in the right lung at all. Has lost five pounds in weight; hectic and cough very bad.

April 2d.—Sinking fast; both lungs extensively involved; is unable to leave his bed. Treatment did him no good.

April 5th.—Died to-day.

Case XVI.—Bernard Clark, aged twenty-three; Ireland; porter; admitted February 13, 1871. Was attacked four days ago with pneumonia of right lung; has cough, rusty sputa, etc. Nearly the whole lung solidified, and respiration very labored; face anxious; pulse 128; temperature 103°. States

that he is of a consumptive family, and has spit blood on one occasion, but has enjoyed good health previous to this sickness; has been a very temperate man in his habits. The physician who had attended him previous to this sickness states that he has a slight tubercular deposit in the apex of right lung, and the inflammation commenced in this case at the apex, and not at the base. Patient very weak, pulse feeble, etc. Ordered supporting treatment, with two gallons gas morning and evening, to sustain and relieve the dyspnœa. Warm fomentations to chest. Weight not taken.

February 15*th.*—Breathing better, and is not so restless; expectorates freely; temperature 100°. Has some appetite. Treatment continued.

February 20*th.*—Is improving rapidly; is able to walk about the wards. Lung is clearing up, though he continues to expectorate a good deal. Has an excellent appetite. Pulse and temperature nearly normal.

February 28*th.*—Discharged to-day, entirely well. Lung clear, except at apex, where breathing is slightly exaggerated.

May 20*th.*—Saw patient to-day; says he "never was in better health;" looks well, and is at his work. This case was remarkable for the rapid recovery from the pneumonic condition.

Case XVII.—Lawrence Dolan, aged twenty-four; Ireland; mechanic; admitted February 24, 1871. Has lost a father and brother from consumption. Was in good health till last June, when he was taken with a slight cough; and, being examined at the time, says his physician told him he was "threatened with consumption." His health, however, did not suffer materially, although he had two hæmoptyses; and his cough left him after a short while. He has been dissipated in his habits, and in November last got on a spree, and continued on his debauch till Christmas, when, after getting wet, he was attacked with cough, fever, pain in side, spitting of blood, etc., which has continued to the present time. On admission to the hospital, he is extremely emaciated, very weak, has hectic, anorexia, etc. Both lungs are involved, and a large cavity is detected in right apex; the whole of this lung is badly damaged. Ordered four gallons gas, with ol. morrh., daily; usual diet; pulse 106; temperature 101° to 101½°. Weight 111 pounds.

March 1*st*.—No better; is very nervous from the effects of his drinking; no appetite. Disease seems progressing in left lung. Ordered anodyne at bedtime. Original treatment continued.

March 12*th*.—Is failing rapidly; the whole of the left lung is involved, and no normal respiratory sounds are heard in any part of the chest.

March 17*th*.—Died to-day, deriving no benefit from treatment.

Case XVIII.—Thomas Frawley, aged thirty; Ireland; laborer; admitted February 21, 1871. Attacked with cough, pain in side, etc., last August, but was not confined to bed; spat blood at that time. Cough has continued to the present, but has not quit work till now; has lost some flesh, but has no hectic. Left lung dull at base, dulness extending as high as sixth rib; left side somewhat contracted, and has pains through it. Expectorates freely; sometimes spits clear blood, at others the blood is mixed with the yellow mucus. Has no hereditary taint, and is in fair condition. Weight 126 pounds; pulse nearly normal; temperature 99°. Ordered three gallons gas, with ol. morrh., daily.

March 16*th*.—Improving slowly; eats and sleeps well, but continues, occasionally, to have hæmoptyses. Treatment continued.

April 25*th*.—Much improved; examination shows the lung almost clear.

May 28*th*.—Lung-sounds normal. Weight 134 pounds. Is in good health, and in fit condition to be discharged.

Case XIX.—John Johnson, aged sixty-one; Sweden; sailor; admitted February 22, 1871. Has had a chronic bronchitis for some years; is much worn down by the disease, and very weak; coughs incessantly, and rests very badly at night; poor appetite. Both lungs affected; *râles*, dry and moist, heard; some slight emphysema detected. Pulse and temperature normal. Weight 136 pounds. Ordered four gallons gas, daily; *mist. tussis* of Case II.; ferri et quin. citrat. gr. v. *ter die*. Good diet; counter-irritation to chest.

March 20*th*.—Improving; cough much less troublesome, and sleeps well.

May 1*st.*—Continues to improve; lungs in better condition; only dry *râles* heard.

May 26*th.*—Lung-sounds nearly normal; weight 152 pounds. Sleeps well, and is in good general condition. Is ready to go to sea again.

Case XX.—Gustave Hatton, aged twenty-two; Sweden; sailor; admitted February 28, 1871. Was attacked with pneumonia three weeks ago at sea; has cough, rusty sputa, etc. Base of left lung involved; inflammation in resolving stage; dulness on percussion, extending as far as fourth rib; moist *râles* heard. Is weak and exhausted; labored respiration; temperature 102°; skin hot; pulse 118. Has been a healthy man, and has no hereditary taint. Ordered four gallons gas, daily, as a general stimulant, quinine, and good diet.

March 21*st.*—Improving; lung much clearer; has some pain in side, and night-sweats. Ordered acid. sulph. arom. gtt. xx. *ter die.* Treatment continued.

April 21*st.*—Discharged to-day; lung clear; general condition good. Regards himself as well.

Case XXI.—Francis Smith, aged thirty-three; United States; sailor; admitted January 16, 1871. Has never been a strong man, and inherits tuberculosis. Two months ago, at sea, had a pneumonic inflammation of right lung; cough, pneumonic expectoration, etc. He had no treatment, and was much exposed. Present condition very poor; right lung dull over most of its surface; respiration tubal; mucous *râles* heard, except at base. Is very weak and anæmic. Pulse 90; temperature 99°; weight 126 pounds. Ordered three gallons gas, daily; ol. morrh. with ferri hydrophosphites. Usual diet.

February 16*th.*—Slight improvement. Weight 130 pounds. Cough and expectoration still troublesome. Ordered *mist. tussis* of Case II. Treatment continued.

April 10*th.*—Not improving; has lost the flesh he had gained, and five or six pounds besides. Left lung has become involved; dulness with bronchial respiration, and mucous *râles* heard at apex. Ordered one gallon additional of gas, making four in all.

May 12*th.*—Patient declining. Both lungs have become hopelessly diseased. Diarrhœa has set in, and he cannot leave his bed.

June 1*st.*—Died to-day.

I have briefly recorded the foregoing cases, and now submit them to the profession, for the purpose, mainly, of showing the action of oxygen gas, *in conjunction with cod-liver oil*, in diseases of the lungs. In some cases, it will be seen, no good results were obtained; in others, the improvement was very marked. It will be for the profession to judge of the adaptation of the treatment to the particular cases reported. It will be observed that, while no specific effect is claimed for oxygen, yet it has been found a most admirable *adjuvant* to the cod-liver oil, and the usual routine treatment in phthisis pulmonalis. Especially has it been found useful, *in conjunction with the oil*, in those cases of phthisis where the patients, either from inability or from the state of the weather, are unable to go out-of-doors. In the cases of acute pneumonia in which it was given, it invariably had the effect of easing the labored respiration in the early stages, and of promoting the resolution and absorption of the inflammatory products in the latter.

Case XVI. is an instructive and illustrative one of this class. This patient had an acute pneumonia in a lung evidently already tuberculous. This will be recognized as a very grave and unpromising condition of affairs—a condition which often terminates in what is popularly known as "galloping consumption"—properly termed by Condie, of Philadelphia, "*tubercular pneumonia.*" The temperate habits of the man, and the early commencement of the treatment, must, of course, be taken into consideration in the case. The result was complete and rapid recovery.

Case XVII. was analogous to this; i. e., the patient had pneumonia in a lung in which tubercles existed previously. But the dissipated habits of the man, and the neglect of treatment, had allowed the disease to make such progress, that the treatment, when administered, had no effect in checking its rapid advance. The man sank soon after his admission to the hospital. The beneficial action of the gas was marked in that troublesome affection, *chronic bronchitis;* increase of appetite, weight, and diminution of the paroxysms of the cough, usually following its exhibition.

II.—*Foreign Body in the Appendix Vermiformis; Peritonitis; Death; Autopsy.* By H. H. A. Beach, M. D., Boston.

The following case is reported for the purpose of directing attention to the important fact that oatmeal-gruel should *always* be strained before its use as an article of diet. For notes respecting the condition of the patient before death, I am indebted to Dr. Alfred Hosmer, the attending physician, and Dr. William Read, of this city, by whom the patient was seen in consultation:

Mrs. A., aged thirty-two, was confined in October, 1870, and had an easy labor. From that time she had eaten freely of oatmeal, partly in the form of gruel, and partly as mush or pudding.

Wednesday, December 21*st.*—Went to Boston in the morning, and returned at noon, suffering from severe pain throughout the pelvic region.

22*d.*—Dressed, but passed most of the day on a couch.

23*d.*—Worse, so that she was obliged to remain in bed. At 5 P. M. she stated that of late she had not felt so well as usual, and had been somewhat constipated. The bowels had been evacuated that day by two injections. She had had no chills nor nausea. Countenance bright. Skin cool. Pulse 72. Some appetite. There was some abdominal pain and tenderness in the region of the navel. Laudanum, in doses of twenty-five drops, was taken three times, without any relief.

24*th*, 4 A. M.—Was sent for on account of very severe pain, which, starting from the umbilicus, extended round the body on both sides to the spine. Morphia (half a grain) subcutaneously, with laudanum an hour later, afforded slight relief. At 10 A. M. another half-grain of morphia.

3 P. M.—Quite free from pain, but has slight nausea (attributed to the action of the morphia).

25*th.*—Was uncomfortable during the early part of the night. At 8 A. M. had a sudden and short attack of severe pain in the right iliac region. No dejection for forty-eight hours. A dose, consisting of half an ounce each of castor-oil and lemon-juice, was given three times in the course of the

day, without producing nausea or a movement of the bowels. Liquid nourishment was taken quite freely. Strength continued good.

26*th*.—At about 1 A. M. was seized with an excruciating pain in the rectum, which extended to the pubes. Ether and morphia (subcutaneously) were resorted to.

7 A. M.—Easy. On examining the rectum there was found a large empty cavity formed by the distended gut. At a point one and a half inch above the anus, and on the right side, was a prominent bridle. Higher up, and at a point easily reached by the finger, was an annular constriction, with a sharp edge. No invagination could be detected, but, on passing the finger through the constriction, a large mass of solid fecal matter was felt. On examining the vagina, it became necessary to push the posterior wall backward in order to reach the os tincæ, which was somewhat dilated. Oil and lemon-juice repeated.

11 A. M.—Pulse 102. Temperature 103° Fahr. (at no time before or after this date was the temperature higher). Abdomen swollen and uncomfortably tender. Stomach quiet, and bearing liquid nourishment very well. In the course of the afternoon thirty grains of calomel in divided doses were administered, but without any immediate result.

27*th*.—This morning Dr. Read visited the patient in consultation. It was thought best to give another enema: a catheter was passed up the rectum for about two-thirds of its length, and as much linseed-oil as the bowel would hold thrown in by means of a syringe. Very little effect was produced. In the afternoon a second attempt was made to bring away the mass by passing a rectal tube beyond the point where the accumulation commenced, and repeating the injection of oil. By persistent efforts the mass in the rectum was broken down and came away. Not long after the patient became restless, and the pulse grew more frequent and feeble. The abdomen was very sensitive to pressure, and as tense as a drum-head, the face pinched and livid, the extremities cold. From the left groin, extending down the inside of the thigh and leg to the ankle, there was a severe pain like that which occurs in phlebitis, and tenderness along the whole course of the femoral vessels. Tongue

slightly coated. No delirium. Turpentine fomentations were applied to the abdomen. A subcutaneous injection of half a grain of morphia in the inguinal region, and twenty grains of chloral internally. In the night enormous evacuations of fecal matter took place, amounting to several quarts (a portion of it was diluted with water, strained, and the solid matter dried; a large proportion of the latter was found to consist of oatmeal-hulls).

After this she was partially relieved, but soon relapsed, hiccough, excessive prostration, and partial stupor came on and continued until Friday morning at 5 o'clock, when she died, on the tenth day from the time of seizure.

Autopsy.—Seventy-two hours after death. Body had been preserved by ice. On opening the abdominal cavity there was found a large quantity of purulent fluid which nearly covered the intestines. This having been removed, the intestines were seen glued together in many places by patches of lymph, forming small cavities; these could be torn open easily by the finger, and were found to be filled with pus, and the portion of the intestine to which the lymph had been adherent, reddened by the congested condition of the intestinal blood-vessels. A small quantity of fecal matter in a fluid condition was found in both the small and large intestine. The appendix vermiformis was very much discolored (a greenish black), its whole substance thickened and softened. Before exposing the interior, it was noticed that it contained a hard ovoid mass. The region of the appendix appeared to have been the seat of the most intense inflammation, and at once directed attention to it as the point from where the inflammatory action, which had involved the intestines, had commenced. Between the external surfaces of the head of the ascending colon, the ileum, and the appendix, was an abscess, the walls of which tied the portions of the intestinal canal just named together. Before opening the appendix it was inflated from its opening into the colon. This revealed a small perforation within half an inch of its extremity, through which a hard minute substance was blown. On examination it proved to be a fragment of an oat-hull. On opening the appendix the ovoid mass before mentioned was found to be a hard mass of hulls cemented together by fecal

matter; the needle-like points of the hulls projected from its entire surface. The left kidney was twice the size of the right one, flabby, soft, and congested. Some purulent fluid was observed in the pelvis. The urine voided just before death contained casts, pus, and blood-corpuscles, with a considerable quantity of albumen. The remaining viscera presented nothing abnormal.

III.—*Two Cases of Opium-Poisoning, treated by Atropia.* By Daniel S. Bucklin, M. D., Lansingburg, N. Y.

I wish to furnish a brief account of two cases of opium-poisoning and their treatment, which, I think, illustrate the utility and safety of atropia as an antidote for opium-poisoning.

On the morning of Friday, the 4th inst., I was called in haste, about ten minutes before ten o'clock, to see a lady, about forty-five years old, not at all habituated to the use of opium, who had taken, about five o'clock of the same morning, through mistake, for tincture of rhubarb, a trifle over an ounce of laudanum. The patient was thoroughly narcotized, but able to walk, with the assistance of her husband. She was intelligent enough to appreciate her danger, and desire assistance in order to keep awake. She stated, in answer to my inquiry if she had vomited, that she drank a cup of warm coffee at breakfast, a short time after taking the poison, and threw it up again. So long a time had now elapsed since the taking of the poison, that I felt I had but little to hope from evacuating the stomach. I concluded, however, to evacuate the stomach as speedily and thoroughly as possible, before adopting other treatment. Not having any thing better at hand, I gave her a very generous dose of pulverized capsicum and ipecac. in water. She drank freely of water immediately after it, and the stomach was most promptly and thoroughly emptied of its contents. I could not discover, by a hasty examination, any decided indications of laudanum in the matters ejected.

She was then ordered, at ten o'clock, ten minims (twenty drops) of Fleming's solution of atropia, every half-hour, until

dilatation of the pupil should occur; and also, once in two hours, a powder containing about eight grains sulphate cinchona, with three grains capsicum. This treatment was carried out until four o'clock P. M., when thirteen doses of atropia, containing each $\frac{1}{60}$ of a grain, and four powders of cinchona and capsicum, had been given. At this time, some reaction was taking place; the pulse was increasing in volume and force, and the skin was becoming warmer. The pupil of the eye was not dilated beyond the natural size, but the extreme contraction, which had existed up to about this time, had yielded, and it responded readily to the influence of a strong light.

All medicine was from this time discontinued. The drowsiness had not yet abated, and unremitting exertion was necessary to keep her from sleeping. Slight efflorescence of the skin had begun to appear. At nine o'clock, drowsiness unabated, skin warm and unrelaxed, efflorescence more marked; pupils no more dilated; patient appeared greatly exhausted, having failed much in muscular power; pulse over 100 per minute. Attendants were requested to put her to bed, and let her sleep.

At eleven o'clock P. M. the husband reported her sleeping very heavily; respiration very slow—movements eight to ten per minute; whole person rigid, and that they were unable to arouse her. He was requested to apply mustard to epigastrium and ankles, and to await my visit.

At twelve o'clock I was released from my engagement, and visited her immediately. The report of the husband was substantially true. There was, however, at this time, no congestion, and the skin was warm and not relaxed. Not having any better instrumentality at hand with which to arouse her, a few grains of capsicum—mixed in water, and poured into her mouth—induced a violent fit of coughing, and she sprang from the bed to her feet, exhibited some surprise at her surroundings, and, without speaking, removed hastily the mustard; remained for nearly or quite an hour in a state resembling somnambulism, rubbing vigorously different portions of her person; then went to sleep, and awoke in the morning somewhat fatigued, but otherwise apparently well.

In this case, the sulphate of cinchona and capsicum were given to aid the patient in resisting or escaping the terrible collapse, usually consequent upon opium-poisoning; and I believe it was of service.

The second case, which I will briefly describe, occurred about two years since. The patient had taken a pill, containing one grain opium, and two of camphor, every *second*, instead of every *fourth* hour, as directed, for an attack of dysentery, which occurred during convalescence from pleuropneumonia. About eight o'clock in the evening, symptoms of narcotism came on, and increased in severity until one o'clock in the morning, when, notwithstanding all the instrumentalities we could devise had been employed, excepting electricity, which I could not use for want of an efficient instrument, critical collapse had ensued. The patient was *wet* and *cold;* pulse 140 per minute, and almost imperceptible at the wrist; respiration stertorous. Patient unable to swallow, and not susceptible of being roused with any means at our command. As a last resort, I concluded to make trial of atropia. Ten minims (twenty drops) of Fleming's solution of atropia were poured into the mouth, and permitted to find their way toward the stomach, without any effort of the patient to swallow. This dose was repeated twice, with intervals of half an hour between them. After the third dose, and before the time for a fourth had arrived, decided dilatation of the pupils, with efflorescence of the skin, began to occur, and no more medicine was given. In an hour more, the efflorescence covered the surface generally, and the dilatation was to the fullest extent. From this time the improvement was steady, and, in four hours, the patient began to converse, and all symptoms of dangerous narcotism had disappeared. The dilatation of the pupils proved somewhat troublesome, nearly a week elapsing before it entirely disappeared.

IV.—*Four Trunk Presentations.* By Dr. G. Torrez, in *Gazette Médicale*, No. 27, 1871.

Obs. I.—Transverse position of fœtus confirmed; manipulations consisting in augmenting a slight obliquity from left

to right, which already existed; repeated for five days; after each manœuvre, prolonged decubitus on the right side. At the commencement of labor, the touch revealed the shoulder and neck, but the presentation became modified, and the head engaged in the strait. Natural termination.

Obs. II.—Pregnancy with long diameter entirely transverse; no external manipulations to change the position, fearing its inutility. The labor once commenced, the finger recognized the shoulder, then the neck, then the head, and the labor ended naturally, contrary to the expectation of the physician, who had prepared to turn.

Obs. III.—Fall at the eighth month of pregnancy, and from that moment change in the situation of the long diameter of the fœtus, which became transverse; from this time the fœtal movements became very tumultuous, and painful to the mother. Slight hæmorrhage from womb, in spite of preventive treatment. In consequence of this hæmorrhage, cessation of fœtal movements and fœtal sounds. Podalic version delivered a dying child.

In the fourth case the transverse position was recognized before labor, but version was necessary. The fœtus, which was at term, could not be recalled to life.

Conclusions.—It is opportune to attempt external manœuvres during the few days previous to labor; where they fail, the version must be performed, as soon as the os is sufficiently dilated, and before the escape of the liquor amnii.

V.—*A Complete Nervous Deafness cured.* By Dr. Moos, in *Heidelb. Ber.*, v. 82–84.

In the course of a developing series of nervous phenomena, there appeared first hyperæsthesia of the auditory nerve, and subsequently complete deafness; this, by means of a prolonged treatment with the uninterrupted current, gradually disappeared.

Bibliographical and Literary Notes.

ART. I.—*A Manual of Midwifery.* By ALFRED MEADOWS, M. D., London. First American from the second London edition. Lindsay & Blakiston, 1871.

THIS work does not call for any very extended notice. It is what its title indicates—a student's manual. The London *Lancet* pronounces it "one of the most convenient, practical, and concise books yet published on the subject." This may be true, but we totally disbelieve in the utility of all works of its class. It is impossible to conceive that any one is ever likely to make a decent obstetrician after mastering its contents. For those who are content with a minimum presentation of an important subject the work has certain advantages. The English is clear, and generally intelligible. Some of the woodcuts are tolerable. A fair idea of English practice is given. Denman, Gooch, Ramsbotham, Churchill, and Simpson, are the authorities most frequently quoted. The physiology is borrowed, for the most part, from the "Cyclopædia of Anatomy and Physiology." The "Transactions of the Obstetrical Society of London" furnish some new cloth to the old garment. The "entirely new chapter" on cephalotripsy was certainly not worth writing. Dr. Meadows's book, when compared with the recent ones on the same subject by Milne and Tanner, does not suffer particularly; but we do not think it entitled to displace older favorites, such as Cazeaux and Tyler Smith. A new English work on obstetrics is no doubt demanded, but when it comes, to be welcomed, it must show a greater knowledge of the progress of the last ten to fifteen years than this work evidences.

ART. II.—*On Bone-setting (so called).* By WHARTON P. HOOD, M. D., M. R. C. S. London and New York: Macmillan & Co., 1871.

ENGLISH publishers have the art of making a little material go a great way. This little book consists of a series of

lectures, which appeared some time ago in a medical journal, on the manipulations and practices employed by a class of ignorant doctors known in the country as "bone-setters." Dr. Hood sets a good example in showing that something may be learned even from these self-taught practitioners, while he exhibits very clearly their devices for magnifying the importance of their achievements and gaining popularity in the estimation of the public. The work is both instructive and interesting.

ART. III.—*A Practical Treatise on the Diseases of Infancy and Childhood.* By THOMAS HAWKES TANNER, M. D., F. L. S. Revised and enlarged by ALFRED MEADOWS, M. D., London. Third American from the last London edition, 8vo, pp. 559. Philadelphia: Lindsay & Blakiston, 1871.

THIS useful and popular work on the diseases of children has been so long before the profession that no extended notice of the last edition is necessary. To Dr. Meadows belongs the credit for such additions and changes as have been made, but they do not materially interfere with the general arrangement of the volume as the author left it. We look upon the work as particularly well adapted to students and young practitioners, and the prescriptions and dietary directions given in the appendix are characteristic of the careful attention bestowed by Dr. Tanner on the details of treatment. It is said of him that in his daily practice he taxed the cook more than the apothecary, and never neglected the smallest matter that could add to the comfort and welfare of his patient, though few men had greater skill in the use of medicines when they were necessary. The volume is issued in a style very creditable to the publishers, and will doubtless enjoy the success it merits.

MESSRS. LINDSAY & BLAKISTON have in preparation "The Pathology of the Teeth," by Prof. Wedl, of the University of Vienna, translated by Francis H. Brown, M. D., and edited

by Prof. Thomas B. Hitchcock, M. D., of the Harvard Dental School.

BOOKS AND PAMPHLETS RECEIVED.—Report of the Fulton County Medical Society, with the Report of its Committee, etc. Atlanta, Georgia, 1871, pp. 102.

Transactions of the Minnesota State Medical Society. St. Paul, 1871, pp. 63.

Transactions of the South Carolina Medical Association, Session of 1871. Charleston, 1871, pp. 126.

Reports on the Progress of Medicine.

THEORY AND PRACTICE.

1.—*A Case of Wandering Pneumonia.* [Berliner Klinische Wochenschrift, October 10, 1870.]

Dr. L. WALDENBURG reportssuch a case as occurring in a lady, aged forty-eight, robust, and always in the enjoyment of good health. When seen on the 7th of November, 1868, both subjective and objective symptoms revealed the existence of pneumonia of the lower lobe of the right lung. On the 9th, physical examination and the thermometer showed marked improvement, and the stage of resolution to have set in. On the 10th the temperature rose to 104° Fahr., and examination proved that the pneumonic process had attacked the upper lobe of the same lung. On the 13th the temperature decreased, auscultation and percussion gave signs of the resolving stage in the upper lobe of the right lung, while the lower lobe was normal, save that mucous *râles* were heard upon auscultation. On the 14th the fever was more active, and the upper lobe of the left lung exhibited the signs of pneumonia, while the upper lobe of the right lung was well advanced in the stage of resolution. Until the 5th of December, almost five weeks from the beginning of the illness, were these processes, which we have described, repeated. The pneumonia wandered from one lobe to another. When the inflammation began to leave the upper lobe of the left lung, it seized the left lower lobe, then the right middle and upper lobes, then the left upper, the left lower, and at last the left upper lobe, where it remained stationary for some time. The temperature was never below 102.1° F., often went to 105.8° F., and even to 107.6° F. At the height of the fever the intellect was very much clouded, the patient apathetic, and, when asked, always replied that she felt well. Milk, beef-tea, and wine, were her diet. Nothing abnormal was to be found in the abdominal organs. The cough was troublesome; a muco-purulent would alternate with a bloody, rusty, and lemon-colored expectoration. In the latter part of the disease the sputa remained muco-purulent; and when the affection became stationary in the left upper lobe, the expectoration was in the form of little balls, which sank in water. In addition to what has been already mentioned, there occurred on the 21st an extended inflammation in the right axilla, which resulted in an abscess, and was opened on the 25th, discharging one pound and a half of pus, and continued to discharge

during eight days. Its healing followed rapidly after a counter-opening had been made. The patient's condition appeared hopeless, and nothing save her strong constitution could have availed her. By the end of November quinine and bark were given her alternately; her room, which was on the ground-floor, in close proximity to a stable, was exchanged for one on an upper floor. Three months previous to this, the patient's husband had died of typhus fever, due, it was thought, to the exhalations from this stable. From the 5th of December the temperature decreased nearly to its normal standard. For several weeks, however, a moderate dulness remained over the left upper lobe, with mucous *râles*; the breathing at first bronchial, later became vesicular. Phthisis, which was feared, fortunately did not follow, unless the continued dulness with the balled sputa may be considered as signs of this affection. Before Christmas the patient was able to leave her bed, and early in January could do light work. With the exception of slight dulness in the left infra-spinous fossa, nothing abnormal was found upon examination. Since then she has perfectly recovered, and resumed her arduous duties of hotel-keeper.

Dr. Waldenburg has been unable to find any account of a similar case. A pneumonia which seizes one lobe and then another is not a common occurrence; but in such a case the process runs through all its stages in each lobe, and usually terminates fatally.

"This "wandering pneumonia" appears to have a remarkable analogy with erysipelas migrans. The combination in this case with an abscess of the thorax makes the analogy still stronger.

In this same number of the *Wochenschrift* is reported a case somewhat similar to the foregoing, occurring in the practice of Dr. Weigand, in Pfeddersheim, near Worms. In this case the patient was a lady of robust health, twenty-seven years old, and had, five months previous, been the subject of a subacute pleurisy of the right side. The pneumonia attacked successively the left upper, the left lower, the left upper a second time, then the right upper, and finally the right lower lobes. The patient died in about a month from the beginning of her illness. This case was remarkable in that all the subjective symptoms of pneumonia were wanting save a jerking character to the inspiration, and at no time did the inflammation pass the stage of engorgement.

The explanation given is, that the pleurisy, which had preceded pneumonia by several months, had called forth in the other lung a collateral hyperæmia, which, in the course of time, led to the inflammatory process.

2.—*A Case of Intermitting Aphonia of Four Years' Standing, resulting in a Cure.* [Berliner Klinische Wochenschrift, November 14, 1870.]

Dr. Levison, of Siegberg, reports such a case as occurring in a girl nineteen years of age. The patient had in childhood suffered from various diseases, but had otherwise been well. She was subject at times to tonsillitis, and, when thirteen years old, had laryngeal catarrh, which soon disappeared. The menses appeared at the age of thirteen, and were from that time perfectly normal. In January, 1865, she complained of difficulty in swallowing, nasal catarrh and hoarseness; the night previous she had slept upon a sofa in a cold room. After six days, during which time she remained in bed, the symptoms disappeared, and she was as well as ever. Eight days from this time she became again hoarse. This hoarseness appeared between three and four o'clock P. M., and disappeared entirely in the morning. Upon examination there were found a moderate injection and swelling of the tonsils, the uvula lengthened, and the pharynx reddened and traversed by varicose veins. In spite of gargles, local applications of va-

rious kinds, derivations and diaphoretics, there was no improvement. From this fact, and inasmuch as the attack commenced each afternoon between three and four o'clock, disappearing in the morning at six, in the interval the patient being perfectly well, the diagnosis was made of a nervous affection of the larynx. None of the usual symptoms of hysteria were present. A laryngoscopic examination confirmed the diagnosis. During the intermission the laryngoscope revealed nothing abnormal save a small erythematous spot on the arytenoid cartilage. When the aphonia had set in, the glottis, during enunciation, assumed the form of an equilateral triangle, whose point was under the epiglottis; the latter was relaxed, and obstructed the entrance to the larynx. The affection continued much the same till 1866, neither appearing nor disappearing so regularly as before, when there appeared the globus hystericus, paleness of conjunctivæ, lips, etc. Quinine, carbonate of iron, lactate of zinc, strychnine, and other remedies, were of no effect. Electricity and the water-cure improved the general condition of the patient, but did not materially improve that for which these means were employed, namely, the aphonia. In September, 1868, liq. potassa arsenitis was given, and later tinct. ferri muriat. was added; the two given together, commencing with five drops of the arsenical solution, and increasing the dose to thirty drops. In January, 1869, the aphonia disappeared, but not till the dose of the medicine had reached fifty drops daily. Ten months have now passed, during which time no relapse has taken place.

3.—*Vertigo as a Symptom.* By C. M. Darrant, M. D. [British Medical Journal, January 28, 1871.]

In the course of a paper upon this subject read before the East Anglican branch of the British Medical Association, the author remarks:

It will be convenient to allude first to vertigo depending upon plethora of vessels within the cranium, although I by no means consider this to be the most common cause. In these cases, we shall be guided by the flushed face, the injected eye; heat, probably, of scalp; sometimes, but not invariably, noises in the ears, and other general symptoms, indicative of cerebral vascular fulness. In this form, the prognosis may be on the whole favorable, provided that the symptoms have appeared but recently, and that no positive evidence exists of any organic change. Cupping from the nape of the neck, with free purgation and saline diuretics, will best avail in the treatment of this variety of vertigo.

In the present day of fierce competition in all walks of life, in which so much is attempted in a short space of time, cerebral anæmia, giving rise to exhaustive vertigo, is of very common occurrence. It is the variety, I believe, most frequently met with, and it is by no means of trivial moment, as, if the condition of brain upon which it depends be not relieved by treatment, it very commonly leads to white or non-inflammatory softening of the organ. These possible dangers should not be hidden from the patient, as the possession of this knowledge (and I have verified it in more than one instance) may alone prevail with him to take necessary rest, and to abstain from those habits or modes of life to which the vertigo owes its origin. Rest and relaxation will come first on our list of remedial measures; while ammonia, steel, bromide of potassium, and cod-liver oil, will stand us in good stead as medicines.

Another form of vertigo, which until lately has received but little attention, is that caused by a syphilitic taint. In this variety, we are often able to trace other and clearer evidences of syphilitic disease; but, if these be

obscure, we find the vertigo very persistent and recurring, often attended by much headache, confined to a particular spot, and occurring with greatest intensity at night. This is a rather constant feature, and facilitates the diagnosis. If unrelieved, the vertigo may increase in intensity to the extent of simulating epileptic convulsions, or even slight paralysis. This form renders the patient irritable, uncertain, and difficult to control. Happily the treatment, if adopted early, is in general successful; the symptoms will ordinarily yield to increasingly large doses of the iodide of potassium with the perchloride or biniodide of mercury. As a help in discriminating this variety, I may mention that while simple epilepsy generally attacks the young, syphilitic vertigo, when it assumes a convulsive form, seldom occurs in those under thirty-five or forty years of age.

One of the most troublesome varieties of vertigo, from its persistency and from its resistance to remedies, is that met with in persons advanced in life. This giddiness is transient, very sudden in its accession; surrounding objects appear to be in motion, and, unless the patient can at once seize upon a support, he falls. If he can sit or lie down, the attack subsides, leaving him a sufferer from more or less intense headache. It is seldom that this form of vertigo is attended by sickness. The "swimming in the head," as it is termed, is seldom functional, unless arising from gout, and indicates rather an atheromatous degeneration of the arteries of the brain (a very common cause), or commencing disease of the cerebral tissue. In younger subjects, persistent vertigo may indicate cerebral tumor or disease of the cerebellum. These elderly patients will bear no lowering. Stimulation by mustard to the nape or behind the ears, with ammonia or the mineral acids, will be useful. When sleeplessness occurs as a prominent symptom in connection with the vertigo (and it is often much complained of), I have found happy results obtained from the chloral hydrate as an occasional sedative at bedtime.

Vertigo arising from heart-disease is chiefly characterized by passive venous hyperæmia, and this, for the most part, will depend upon disease or weakness of the right auricle, interfering with the due return of blood from the brain. The prognosis in these circumstances must, of course, be based upon the extent of mischief in the heart itself, and the treatment directed to the improvement of the tone of the general circulation.

In all cases of persistent vertigo, the urine should be carefully and repeatedly examined, since a diseased condition of kidney with albuminous urine, and its consequent blood-poisoning, will be found to be not an infrequent cause of vertiginous disturbance.

In the above observations, I have by no means exhausted the various causes upon which giddiness may depend. Functional digestive derangement, as well as losses of blood, and all the varieties of toxæmic poisoning, might severally be adduced as influencing causes. My object, however, has been rather to place in review, very briefly, the more prominently exciting causes of the phenomena of vertigo as seen in every-day practice, arising as they do from such very opposite conditions, and, as such, if carefully investigated, becoming of real practical value.

4.—*Puncture of the Abdomen in Tympanitis.* [Practitioner, April, 1870.]

Dr. Stein, of Baireuth, observes that the puncture of the abdomen by means of a fine trochar is an operation of so simple, and at the same time, as shown by experience, of so harmless a nature, that it is surprising it is not more frequently performed, either as a means of preserving life, or as a palliative means. Niemeyer is indeed opposed to it. Kohler only considers it admissible as a *dernier ressort*. Hochstetter details a case of acute

tympanitis from eating unripe fruit, where, though proposed, it was not allowed to be performed, on account of the supposed danger attending it, and the patient died in two hours. Oppolzer and others have occasionally tried to recommend it. M. Stein has performed the operation in two cases. One was a young woman with a large ovarian tumor compressing the large intestine, and leading to tympanitis of so severe a character that suffocation was threatened. A puncture was made with a trochar in the cæcal region with great relief to the patient, and the operation was then repeated once or twice a day for about fifty times, each time with the greatest advantage, and the express wish of the patient. After death, which resulted from the primary disease, scarcely any marks of the puncture were visible, and there were absolutely no indications of past or present inflammation of the peritonæum. The second case is too long to give a satisfactory abstract of, but in it also frequent puncture was adopted below the ensiform cartilage, which, though the marks were clearly visible after death, had certainly produced no injurious effects. (*Deutsches Archiv für Klinische Medicin*, Band vi., Heft iv., 1869.)

5.—*Twenty-six Cases of Typhoid Fever successfully treated with Milk.* By Alexander Yule, M. D. [Medical Times and Gazette, July 9, 1870.]

There is nothing new about the treatment of this fever by milk. As such treatment may not, however, be the general one adopted, I have been induced to offer my testimony as to its efficacy. It stands to reason that people suffering from disease quite as much require food as those in health, and much more so in certain diseases where there is rapid waste of the system. Frequently all ordinary food in certain diseases is rejected by the stomach, is loathed by the patient. Nature, ever beneficent, has furnished a food that in all diseases is beneficial—in some directly curative. Such a food is milk. In the twenty-six cases we have treated of typhoid fever its great value was apparent.

To be sure our numbers are not large, yet sometimes the small indicates the resultant on a larger scale. The indications we followed were—1. To check diarrhœa; 2. To nourish the body; 3. To cool the same.

With regard to the diarrhœa in typhoid fever, we believe it ought, if possible, to be checked, or at least restrained; for you might as well think of leaving a sore-throat in scarlatina to take its course (being eliminative of fever-poison), or irritate it a little, as of encouraging diarrhœa in typhoid fever. Astringents were used in all cases (with occasional doses of ipecacuanha), acid. sulph. dil. being found most serviceable. The acid was used from beginning to end of fever. We imagine that, in those cases which recover where diarrhœa is encouraged, the patient got well in spite of the treatment; for we believe that nothing so much tends to extending of ulceration, to hæmorrhage, peritonitis, and protracted convalescence, as the use of salines or such like remedies. Who would think of healing an ulcer by irritating it, by not allowing rest for the reparative powers of Nature to do their work? An ulcer in the ileum requires rest quite as much as one in the leg.

When diarrhœa became violent, the most powerful astringents were used, and, when the bowels were once "locked up," they were so maintained for from ten to fourteen days, with not only no inconvenience, but with decided advantage. To cool the body and to nourish it were the other two indications:

1. *As to Nourishment.*—That the body in fever wastes rapidly is evident; and from the accumulation of waste material in the blood, and the want of pabulum to feed the fever, the most disastrous results eventuate—

resulting in death—from the fever drying up the very issues of life. Now, if pabulum can be afforded to repair the textures that, from the action in the fever-poison, are being used up, one great, if not the greatest, object of treatment is attained; for fevers obey, like every thing else in this world, certain fixed laws. Like an object in vegetable life, there is the seed, the bud, the unfolding, the full leaf, the withering away and decadence—so with fevers and their incubation, ingravescence, etc. Now, if the body can be sustained until the fever has gone its course, health will result. Milk, of all things, seems best adapted for this purpose; for it is digestible, is relished by fever-patients, contains all the requisite material for the nourishment of the entire body—the nervous system in especial, which in fever is always greatly affected. Furthermore, in fever there is great thirst, and patients ardently long for that which will cool the parched mouth. Thus, by interdicting the use of water *in toto* throughout the fever, nourishment can always be given in the shape of cold new milk. Cold beef-tea is by no means to be despised, but is much less relished, and not unfrequently loathed when the fever is intense, while milk is then taken with much gusto. Again, cold milk, when the diarrhœa is severe, exercises a most kindly action upon the ileac ulcerations. The rule we adopted was to allow milk *ad libitum*. In some cases quantities far beyond what could be absorbed by a stomach whose powers of absorption were reduced to a minimum were taken, a portion of the milk passing in an undigested state from the bowels. This, however, far from, in my mind, being an objection, was a decided boon, for the milk as it passed over the inflamed and ulcerated ileum exercised a soothing influence.

2. *To cool the Body.*—Now, cold milk is an admirable agent for cooling the body (cold water would do as well, but then new milk nourishes and cools at the same time), and heat is a prominent symptom of fever (*ferveo*, I boil), and a measure of the activity of the fever changes in the body. Another agent used in all these cases was the acid. sulph. dil., which aided in reducing temperature, in restraining diarrhœa, and, if the theory is to be credited, diminishing the alkalinity of the blood.

Concluding General Remarks.—Such were the measures relied upon in the treatment of twenty-six cases of typhoid fever. Six of the cases were adults over twenty-two years of age, ten between nine and twenty-two, the remainder being under these ages. Wine was given in no case during the active continuance of fever, as it increased the diarrhœa (when tried), and promoted delirium. When the fever had left, and the patient became exhausted and sleepless, then wine in three cases did well. Never more than six ounces was required per diem, and that only for a few days (in an adult). In two cases where there was great pain in ileum, blisters applied there did good. A few doses of tartar-emetic and tr. opii were used in one case to procure sleep, which it sufficed to do. We believe that milk nourishes in fever, promotes sleep, wards off delirium, soothes the intestines, and, in fine, is the *sine qua non* in typhoid fever.

6.—*On the Use of Raw Meat in Diarrhœal Affections.* [Medical Times and Gazette, July 2, 1870.]

I learned the use of raw meat as a remedy for diarrhœa, from the late estimable Prof. Trousseau, during a visit paid to his clinique at the Hôpital des Enfants Malades in 1851. Since that time I have had abundant opportunities of proving its efficacy, and, although I know that it is largely used by some physicians, it may not be unseasonable at the present time to call attention to it, and to encourage its more general use.

Let me begin with a few words on the mode of preparing it. The meat used may be either mutton or beef—say a tit-bit of the loin of mutton, or of the fillet or other tender part of beef. This must be submitted to a process either of pounding, or of scraping, so as to get out the red, soft, muscular substance, as free as possible from all fat and fibre. The muscular substance so prepared forms a soft pink pulp, and even a good-sized piece of raw meat seems to yield wonderfully little by comparison with the parts that are rejected. It must be a pulp, giving no feeling of resistance when squeezed between the fingers.

The modes of administration are many. It may be given by itself, and this way is best in the case of young children. Very young infants may suck it from the end of their nurse's finger, and most of them take it greedily enough in this way. Children who are older, say from two to five, may swallow it if dusted over with white sugar. Older persons may take it conveniently if diffused through a little strong beef-tea.

But there is another way, for which I am indebted to a lady who has made very large use of this remedy in the case of her invalid daughters, and which is known among a pretty wide circle as a *jellied chop*. This consists in diffusing the meat-pulp through a stiff meat-jelly, and allowing it to cool in a shape. This is eaten like a spice, and is very nice to any one whose prejudices are not aroused by the notion of rawness. Salt and other condiments may be added at discretion.

The cases in which raw meat has peculiar efficacy are those in which other food passes undigested, and adds to the irritation of bowels in a state of diarrhœa. It seems to furnish the most efficient kind of nutriment with least inconvenience from bulk or other quality, and to be digested and absorbed with as little fecal residuum as possible. Still, there must be something more about it than this; for the liquid essence of beef will not take its place, neither will cooked meat.

First among the cases in which it is useful may be mentioned any acute cases of infantile diarrhœa, especially the infantile "cholera" of summer. No matter what medicines and what other kind of food may be used, I believe raw meat to be in itself both a remedy for the diarrhœa and a nutriment that may keep the child alive till the disease passes off.

Secondly, in the chronic diarrhœas of children, arising from scanty food, or, what comes to the same thing, food which cannot be digested, and which consequently passes the bowels as a foreign offending substance, here the raw meat acts as food and medicine.

In the habitual diarrhœa associated with "marasmus"—that is, with the superficial ulceration of the intestinal mucous membrane, and enlarged mesenteric glands of strumous children—the raw meat, especially in the form of the "jellied chop," is of most especial service. It is curious to see in cases of this sort how absolutely the stomach sometimes refuses to act upon the food put into it, so that meat, milk, etc., may be recognized unaltered in the fæces. It is just in these cases that the raw meat shows itself susceptible of quick digestion in the stomach. The cases which the ancients called *lienteria*, or *intestinorum levitas*, and which were designated in England in the last century "lubricity of the intestines"—in which stomach and bowels are so irritable that they pass on and eject the food before it has had time to be dissolved and absorbed—are equally benefited by the use of raw meat.

Lastly, there are the cases of the obstinate vomiting of pregnancy, whether attended with diarrhœa or not. This is a kind of case in which no remedy is unwelcome or superfluous. I cannot take to myself the credit of suggesting it, for the mother of a young pregnant lady who was in imminent danger of exhaustion from vomiting had witnessed the good effects of this food in the case of another daughter who died of ulceration of the

intestines, and gave it of her own accord. But I can bear testimony to the fact that the raw meat was taken readily and kept down when almost every other food was loathed and vomited, and I consider the patient's safety largely due to it.

There are other cases of atrophy, dyspepsia, and malnutrition, in which I have found it useful. I should like also to say a few words on some other uses of meat, cooked as well as raw; but at present I wish mainly to call the attention of my medical brethren to its efficacy in diarrhœa, which may be expected to be the cause of an abundant mortality of infants during the next two months.

7.—*Tinea Tonsurans* (*Ringworm*), *contracted from a Horse.* [Lancet, March 25, 1871.]

At a recent meeting of the Clinical Society of London, Mr. Tilbury Fox brought before the notice of the Fellows seven cases of ringworm of the arms and hands, of an extensive and severe form, in seven men, in whom the disease had been contracted from a white pony whose body was studded over with patches of tinea tonsurans, having analogous characters to those seen in ordinary ringworm of the scalp. The disease occurred only in those men who had groomed the pony: in three men brought to Dr. Fox by Dr. Drage, of Hatfield, and who were the ordinary grooms of the owner of the pony; and in four others, attendants of the Royal Veterinary College, where the pony had been sent for treatment. The patches of ringworm were chiefly in front of the arms; they were large, more infiltrated than usual, and, in one case, markedly herpetic. In one of the other cases, the central portions of the circular patches were studded with minute pustules. Dr. Fox attributed the severity of the disease to the large amount of fungus of a very luxuriant kind being sown at one time upon the arms of the men. In one man parasitic sycosis was produced. Hairs taken from the pony, exhibited under the microscope, were seen to be ensheathed in spores and mycelial threads, both of which invaded the shaft of the hair; and scales taken from a patch on the arm of one of the men were also placed under the microscope, and showed the mycelium of the fungus, which Dr. Fox pronounced to be the trichophyton, sprouting in all directions throughout the epithelial scales. Dr. Fox stated that he had never seen the transmission of ringworm from the horse to man before, nor had Prof. Spooner in his forty years' experience; but he referred to the history of an epidemic which occurred some years ago among horses and mules in the valley of the Borne, in Savoy, and which was reported upon by Prof. Papa, in which a disease similar to that in the present seven cases was observed to be communicated to man from the horse. Bazin had also noticed the same occurrence. He remarked, however, that the transmission of tinea from the ox and calf to man was common enough. He concluded by remarking that the seven cases brought under the notice of the Society, illustrated the fact that ringworm of the surface varies considerably in aspect, according to the amount and rapidity of growth of the fungus, from a mere erythematous desquamating patch (so-called parasitic pityriasis) to a pustulating surface resembling and liable to be mistaken for an eczema; the two extremes being connected by transitional forms, represented by an abortive herpes, a well-marked herpetic patch, or a desquamating circular area bounded by an herpetic edge; the occurrence of so much effusion as is necessary to produce herpetic vesicles being dependent upon the amount of irritation set up. Veterinarians who asserted that "ringworm" was common in the horse, and might be communicated to man, had not brought forward any proof that the disease which they

styled "ringworm" was really parasitic, and he had no doubt many non-parasitic eruptions of animals were classed under that term. The disease in the white pony referred to was, as proved microscopically, undoubted tinea tonsurans.

8.—*The Decubitus in Phthisis Pulmonalis.* By R. W. Foss, M. B. [Medical Times and Gazette, August 27, 1870.]

It is an interesting fact that in many one-sided inflammations in the chest the decubitus is on the affected side, of which there is a satisfactory explanation in the hypothesis that the other side has to do double work, and so, by this means, its expansion is made the easier. In phthisis pulmonalis, on the other hand, the reverse is the case; the decubitus, instead of being on the most affected, is on the least affected, side. Louis, speaking of this latter phenomenon, says: "This circumstance may consequently aid the observer, without the use of auscultation or percussion, in ascertaining which side of the chest is most affected."

I have examined fifty-eight cases of undoubted phthisis, and found that in forty-seven the decubitus was on the healthiest side, in three on the most diseased side, and in eight it was not affected at that particular time. Of the eight in whom the decubitus was not affected, five had double cavity, one had passive one-sided cavity, and two had crepitation to about an equal degree at both apices, so that in seven the disease was equal on both sides, and in the eighth it was passive. In several of these cases, at one period of the disease, the decubitus had been solely on one side; but, as it progressed and affected both sides equally, then the decubitus became dorsal, or finally abdominal.

Of the forty-seven whose decubitus was on the healthiest side, the disease in all was advancing with more or less rapidity. Of the patients who could lie on the most diseased side, the disease was in a passive condition at the time; but in one of them soon afterward active symptoms, as hectic, etc., set in, and then the decubitus was on the least affected side; so that it may be said that, during the absence of active symptoms, the decubitus is not so much interfered with, but that, as soon as they appear, where one side is more affected than the other, then the decubitus will be on the least affected side. This fact is interesting when taken in relation with the hectic flush, which is usually said to be greatest on the most affected side; so that we see the patient lying on the healthiest side, with the greatest flush on the opposite cheek—two things, when taken together, quite diagnostic of the most affected side, viz., decubitus=healthiest side, greatest hectic flush=cheek corresponding to most diseased side. In nearly all the cases there was softening on one or both sides, and until this process took place the decubitus was normal. There are two ways of accounting for this one-sided decubitus, neither sufficiently comprehensive, however: first, that, by lying on the diseased side, the abnormal secretions are emptied with greater difficulty; secondly, that the weight of the superincumbent viscera causes the increase of cough and pain complained of. In forty of the fifty-eight cases, the left was the most affected side, bearing out the general rule.

9.—*Ought Consumptives to marry.* By Robert Barnes, M. D. [British Medical Journal, February 25, 1871.]

It is hard to tell any one, much more a large class, that it is wrong to enter into those social relations which, if wisely contracted and preserved, give the chief charm to life. Indeed, advice upon this matter, although often sought, is often disregarded. Passion and immediate interests submit

unwillingly to the cold reasoning of philosophy. Still the problem—Is it to the advantage of the community, or of the individuals primarily concerned, that those bearing the seeds of tubercular phthisis should marry?—is one which medical science may properly discuss.

My own observation tells strongly on the negative or prohibitory side:

1. I have now seen a good many very sad instances where young men and women in whom consumption was either latent, stationary, or slowly progressing, have sunk rapidly after being "engaged," or after being married. The chance of recovery, or even of not getting worse, of a tuberculous sufferer, depends upon observing the strictest hygienic rules; and of these rules a main one is the preservation of mental and emotional calm.

2. I have seen the effect of pregnancy and labor upon many consumptive women. I have no hesitation in saying that there never was a greater fallacy than that which affirms that pregnancy is antagonistic to phthisis. In my experience, labor commonly precipitates the fatal issue of the disease. Some perish during pregnancy; a large number sink rapidly after labor. This last trial breaks down the remaining forces of the system.

3. Consumptive people seem at least as apt in procreation as others. The children whom they bring into the world undoubtedly inherit the tubercular diathesis. How many of these perish quickly of convulsions, or, a little later, of abdominal or pulmonary disease! How few grow up to robust adolescence! And how large a proportion of those who survive to maturity repeat the sad history of their parents, scattering mental and physical distress around them!

All this is too familiar to medical men. Seeing these things on a large scale, and looking beyond the mere individual aspect of the question, we cannot help noting the disastrous effects of the union of consumptive people upon the commonwealth. Physical degeneracy is stamped upon a large section of the community.

That physical diathesis which, in the easy and well-educated, often develops a romantic sentimentalism, distorting the judgment of self and of relations to others, produces, in the needy and badly-trained, those forms of mental degradation of which our workhouses, prisons, and asylums, give so many terrible illustrations. I entirely concur in the opinions expressed upon this subject by Virchow.

It is clearly our duty to discourage marriage among consumptives. Public and private interests in relation to this subject are greatly in the hands of the medical profession. Legislation would be impossible. It is, therefore, superfluous to discuss the policy of legislating. In this free country, the sound legal maxim, "*Sic utere tuo, ut alienum non lædas,*" meets with scant respect. It is difficult to forbid obstinate people from spreading small-pox; and the right of inoculating syphilis is so hotly maintained by a large section of the public, that the Contagious Diseases Act even is in jeopardy. But a healthy public opinion may do great good; and this public opinion must be based upon medical experience. Public opinion may, indeed, have little weight upon certain consumptives. Few persons, while under the thraldom of the most imperious and selfish of all the passions, will recognize the duty of sacrificing their individual desires for the public good. This form of patriotism has probably never seen many devotees. Families may, however, under the wise guidance of their medical advisers, commonly succeed in protecting their healthy sons and daughters from contracting engagements with tainted aspirants. Firmness in this direction will avert incalculable misery. Of course, this social proscription should not be indiscriminating. An isolated case of consumption, breaking out in a family which can otherwise show a clean bill of health, cannot have the same significance as attaches to the multiplied recurrence of the disease in successive generations, and different branches of a family.

At any rate, in the case of persons actually tuberculous, there ought to be no doubt. In their own interest, as well as in that of those with whom alliance is contemplated, interdiction is dictated.

10.—*Two Cases of Hydrophobia treated by Hydrate of Chloral.*

In the *Lancet* of August 12, 1871, the following cases are reported by Henry W. T. Ellis, M. R. C. S., England:

On the 18th of April, I was sent for to visit Albert P——, aged seven years, who, three weeks previously, had been bitten in the face by a stray dog, one of the bites involving the inner canthus and conjunctiva of the right eye. I was told he had complained the day before of being poorly. His parents, however, looked upon the attack as a slight febrile one from cold, and took no further notice than to give him an aperient. His anxious and frightened expression of countenance powerfully impressed me; and, upon finding he dreaded the sight of any fluid, and could not be got to swallow it, the fact was quite evident that I had to deal with a case of rabies—this characteristic symptom, denoting an affection of the œsophageal branch of the eighth pair, being so well marked. His pulse was quick; tongue covered with white fur; he was restless and fidgety, refusing food as well as drink, and, on making the attempt to get him to swallow a little tea, the effort brought on a violent spasmodic constriction of the throat—even the sight of the cup excited agitation and aversion; but he did not complain of much pain in the bitten parts. Knowing the inefficiency of all treatment in this frightful disease, I determined upon trying the hydrate of chloral, at any rate, with the hope that it would in some measure control the excitement and violence that in another stage might be expected to follow; and in this, I am happy to say, I was not disappointed, for it certainly mitigated those symptoms in a remarkable degree. The remedy was administered in doses of a teaspoonful of the syrup, diluted with a little water, every two hours, and subsequently every hour, considerable difficulty being, of course, experienced in the effort to swallow, but it is believed most of it was eventually got into the stomach. As regards progress, the disease, however, went on unchecked. On the second day, the sense of touch was most painfully excited by the slightest application of the finger to the face; even when the spoon came in contact with the lips there was a catch in the respiration, denoting, I presume, an affection of the recurrent nerve; the pupils became dilated; tongue more thickly coated. There was a continual desire to be walking about, evidently showing that the lungs then were not much oppressed. On the third day, the little sufferer talked almost incessantly, often incoherently, but there was little tendency to violence or vicious impulse. The hydrophobic saliva, thick and tenacious, began to accumulate, and, when not got rid of by spitting, occasional vomiting took place, which afforded relief for a brief period. He, however, gradually got weaker, and unable to eject it, sinking from apnœa at 4 A. M. on the fourth day after the characteristic symptom developed itself.

The other case, to which I was called on the following day, was in a little girl, Alice Mary M——, aged five years, bitten at the same time in various parts of the head and face. The symptoms and treatment were nearly identical; but on the third day, at 2 P. M., there was for a short time some violence, controlled, however, entirely by the chloral hydrate, the administration of which had been rather neglected. During this period the poor little creature screamed loudly, requiring some restraint, and saying her parents were killing her. Saliva then began to collect, and was either ejected or ran out of the corner of her mouth. A period of perfect

calm then came on, and continued until her death, in my presence, at 7 P. M. the same evening, sinking apparently more from asthenia than apnœa.

The history of both these painful cases, pointing, as it forcibly does, to an affection of the central and spinal nerves, the brain, and especially the medulla oblongata, makes it quite clear to my mind (and I devoted much time and attention to them) that the agonizing sufferings of the subjects of this horrible disease were considerably alleviated by the means employed; and, although unsuccessful in warding off a fatal result, it was satisfactory to find that the friends of the poor little sufferers fully appreciated the beneficial effects of the remedy used.

DISEASES OF CHILDREN.

I.—*Hæmorrhage from Umbilical Cord.* [American Journal of Obstetrics.]

Dr. George Pepper related the history of a case of hæmorrhage from the free extremity of the umbilical cord. The child was a very fine, large male, eleven and one-quarter pounds in weight. The cord was cut, stripped up, and tied in the ordinary way with two ligatures. The child was then carefully wrapped up, and placed on the floor. After about half an hour, Dr. Pepper's attention having been given to the woman, he noticed that blood was escaping from the blanket in which the child was wrapped. The covering was removed and every thing around the child was found saturated with blood, which was still escaping from the cut extremity of the cord. The ligatures were removed and reapplied very firmly; the child was considerably depressed, but soon rallied. After about five hours he was again summoned, and on reaching the house found that hæmorrhage had taken place from the free extremity of the cord; the amount, however, was not very great; the ligatures were again removed and reapplied; four or five hours later, hæmorrhage set in for the third time; on this occasion additional ligatures were thrown around the cord, and the dressing filled with tannic acid; no further bleeding took place. The child subsequently did very well, the cord falling off normally about the sixth day.

Dr. Goodell remarked that Dr. Pepper's case was to him unique, for in his own practice a third ligature had never been necessary, although a second one had sometimes been required, until he had adopted the following modification of Dr. A. F. A. King's method for the management of the cord: So soon as the child cried lustily, or freely respired, he cut the still pulsating cord of the usual length, and, after grasping it firmly at the umbilicus with the thumb and index-finger of the left hand, to prevent it from being torn out, proceeded to "strip" it with the thumb and forefinger of the right hand, in order to squeeze out of it all the blood and as much as possible of the gelatine of Wharton. If the cord were lobulated with blisters of this gelatine, each one was nicked with the scissors and emptied. The compression at the umbilicus was now for a little while dispensed with, in order to allow the internal portion of the vessels to collapse, and then a second instalment of "stripping" was resorted to. When all hæmorrhage had ceased—which was invariably the case after this manipulation—and the cord had become perfectly flaccid, it was tied in the usual manner. But neither binder nor greased or scorched rag, nor a dressing of any kind whatever, was afterward used, the cord being left to dangle about freely. He (Dr. Goodell) claimed for this method that the cord dried

up without any bad smell, or process of putrefaction, and fell off like a ripe fruit without leaving a raw stump. He stated that formerly two astringent lotions of tannin and zinc were kept at the Preston Retreat, which were in constant demand for the sore navels; but that, since adopting this new method, out of more than two hundred infants, not a *single one* had had a pouting, angry-looking, or purulent umbilicus; nor had any one suffered from fungoid vegetations or umbilical hernia. That, since anatomists had pointed out the existence of muscular fibre in the cord, he believed its ligation to be unnecessary; for, if hæmorrhage did not take place immediately after cutting and "stripping" it, it was very unlikely to occur at a later period. That he had once successfully dispensed with the ligature, but had suffered so much anxiety of mind lest a regurgitation of blood should occur during his absence, that he had ever since invariably applied it, although he was ashamed of this cowardice, and considered it the result of early prejudice. That the fact of a second, and even third ligature, being occasionally required to arrest subsequent hæmorrhage—as in Dr. Pepper's typical case—so far from being an argument in favor of ligation, was to him rather an argument against its use. For, if the cord were tied before being thoroughly emptied, and allowed to collapse, the blood imprisoned in it by the knot, being out of the circulation, would not only keep the vessels patulous, but would also necessarily undergo a process of putrefaction.

Dr. Duer stated that he had been induced by Dr. Goodell to try this method in a case occurring in his own private practice which they saw together, and so gratified was he with the result that he was now introducing it in the lying-in wards of the Philadelphia Hospital.

2.—*The Action of Mercury in Children.* [British Medical Journal, March 25, 1871.]

At a late meeting of the Medico-Chirurgical Society of Edinburgh, Dr. Stephenson read a paper on this subject, of which the following is a brief abstract:

He remarked that recent physiological experiments tended to prove that mercury had no direct stimulant action on the biliary secretion; but, so long as these experiments were made only on healthy organs, they could never demonstrate that it had no effect on the pathological conditions which were interfering with the performance of the function, and the result of such experiments would never overturn its use after the manner of a rational empiricism. An analysis of its action in the intestinal affections of children showed that its good effects could be explained on other grounds than its mere cholagogue action; and, although this theory of its action was erroneous, mercury was still of service. Its use, however, should be limited almost wholly to its action as an occasional purgative. When given to produce its constitutional effects, the constitutional type or diathesis greatly determined its action. It was in subjects most liable to those external diseases where mercury was of service when applied externally, that internal affections were most likely to be amenable to its constitutional use. From the consideration of its internal use, illustrated by cases, the following conclusions were drawn: 1. Mercury may be employed to influence the constitution without any injurious effect on the general health. 2. To obtain its therapeutic action, it is not necessary to produce its visible physiological effects; it becomes injurious so soon as these are manifested. 3. It is an error to suppose that children are less susceptible to its influence than adults; its effects are not to be looked for in its action on the mouth, but in its depressing effects and in deterioration of the

blood. 4. It should be used only so far as is necessary, and in order to stimulate the nutritive changes in the tissues, not in the character of the constituents of the blood; for this purpose it should be used as a whip or spur only—that is, occasionally and at intervals, not continuously throughout the whole course of the disease. 5. Its use in modifying acute inflammatory action is very limited, and requires further observation; but there is no question as to its power over the products of inflammation, in starting the processes of resolution and absorption where these have been arrested; and, where other remedies fail in producing a change on morbid nutrition, it does in certain cases succeed in promoting a return to healthy action. 6. No number of cases improperly treated by mercury, no number of "constitutions shattered by its abuse," no number of instances where disease has been cured without it, can in any way invalidate the results of its effects, where it has cured where other remedies have failed, or lessen in any measure the position here defended of a judicious use of the medicine. In infantile syphilis, the author had the greatest confidence in the good effects of mercury, but limited its use, as in other diseases, and stopped it whenever amelioration in the symptoms was observed, renewing it, if necessary, and not giving more than one or two grains of gray powder daily for a fortnight.—Dr. George Balfour remarked on the interesting and practical nature of the paper, and agreed with the author's views on the treatment of chronic cases of pneumonia with mercury.—Dr. Bennett had considerable difficulty in criticising a paper which discussed such important topics, containing as it did much assumption and little fact. What the author understood by "rational empiricism" he did not know; but, for his own part, he would define it as experimental therapeutics, based on a knowledge of anatomy and physiology. Dr. Stephenson maintained that mercury was not a cholagogue, and had no influence whatever in causing bilious stools in children. He also maintained that jaundice in children yielded to the simplest treatment. As he (Dr. Bennett) agreed with the author on these points, he need not dwell upon them. But Dr. Stephenson supported the ideas of those who maintained calomel to be a sedative, and had stated that eight or ten grains of calomel in an adult, and three or four grains in a child, when mixed with sugar and placed on the tongue, at once checked obstinate vomiting. In India, much larger doses, viz., thirty grains, had been recommended as a sedative in dysentery and cholera. He (Dr. Bennett) believed such practice to be of no benefit, but, on the contrary to be dangerous. If placed on the tongue and not swallowed, mercury was likely to produce violent stomatitis and salivation, such as occurred in the man Holden, whom he had presented to the Society at a former meeting. Dr. Stephenson also supported the employment of mercury in the syphilis of young infants. He (Dr. Bennett) did not consider it to be of any service in such cases, nor in those of diphtheria. Further, Dr. Stephenson called it a stimulus to the tissues, said it acted as a whip or spur in chronic inflammatory diseases, and had given three cases as examples. They were quite insufficient to support such a proposition, which, if extensively followed, would, in his opinion, be productive of great mischief. Dr. Stephenson had stated that mercury increased cell-growth and caused proliferation of cells. But did he possess any facts or series of preparations capable of supporting this assertion? Such an idea also appeared to be opposed to what was said in the first part of the paper; viz., that it caused anæmia and destruction of tissue. What was at present required in therapeutics was an effort to distinguish between the supposed action of remedies and the spontaneous cure of diseases. Wherever this, in recent times, had been carefully carried out, it had been shown that in many diseases violent remedies, such as bleeding and mercury, were opposed to a rapid recovery. He referred to the diminution in the mortality and dura-

tion of pneumonia, since antiphlogistics had been abandoned; and hoped before long to convince the Society, by a tabular view of cases, comprising the bad as well as the good ones, that in hepatic disorders mercury could only be considered as useless or injurious.—Dr. Angus Macdonald agreed with much that Dr. Bennett had said; but, though he set out in practice a pupil of Dr. Bennett's, with a profound skepticism as to the use of mercury, he found himself, by experience, compelled to use it in many cases, from having seen the advantage of its use.—Dr. George Balfour, in answer to Dr. Bennett, showed that mercury, in acting as a destructive agent on tissue, acted chiefly on new and morbid tissue, and by its destructiveness did good. He also pointed out how large doses of calomel acted as mere irritant purgatives, and were not absorbed, while very small doses were absorbed by the system.—Dr. Stephenson, in reply, stated that, in his opinion, Dr. Bennett had not appreciated the points illustrated by his cases; and that Dr. Bennett did not distinguish between the use and the abuse of a remedy.

3.—*Treatment of Catarrhal Pneumonia of Infants at the Breast, by Carbonate of Ammonia.* [Practitioner, November, 1870.]

We have ourselves, for several years, at the Infants' Hospital in this city, employed substantially the same plan of treatment as that referred to by Dr. Stierlin in the paragraph below. The results, as compared with the old methods of treatment, are so decidedly superior, that we now seldom resort to any other medication; and by it, too, we are enabled to dispense very largely with alcoholic stimulation. Caution in the use of sinapisms to the chest must be enjoined. Our usual method is, to use the linseed-poultice—thick, warm, and moist—occasionally, if there be need of greater counter-irritation, sprinkling a little mustard over the surface of the poultice. It is not wise to leave the poultices on overnight, unless special pains be taken to prevent its displacement or drying up. On removing it, the oil-silk jacket is applied, either next the skin or with a thin layer of flannel intervening, as circumstances may require. We use the carbonate, either dissolved in some simple vehicle or in the shape of the aromatic spirits, which is pleasanter, and invariably well borne even by irritable stomachs.—[E. S. D.]

Dr. Stierlin, of Schaffhausen, observes that the danger of catarrhal pneumonia (bronchopneumony, lobular pneumonia) in infants, whether consequent on measles, whooping-cough, or bronchial catarrh, is due to the circumstance that the bronchiæ become plugged, carbonic-acid narcosis succeeds, and too small a quantity of blood enters the left ventricle, which exerts a paralyzing influence upon the heart. Dr. Stierlin formerly treated such little patients with emetics, as ipecacuanha and vinum antimoniale, calomel, and mustard-poultices, but with very indifferent results. But after he had begun to administer ammonium carbonicum (carbonate of ammonia), and ammonium carbonicum pyro-oleosum, he was so successful in the treatment of this disease, which, according to Rilliet and Barthez, is absolutely fatal during the first year of life, that of one hundred and fifty

patients only seven died. He usually prescribed the ammonium carbonicum to the extent of twenty grains; or the liquor ammonium carbon. pyro-oleosi to the extent of half a drachm in two ounces of fluid, of which a teaspoonful should be taken every hour. During the first year of life, besides the above, he applied sinapisms to the chest. In older and stronger children he also prescribed emetics. He never observed any disadvantageous effects.—*Berliner Wochenschrift*, 1870, No. 26.

4.—*Transfusion in the Asphyxia of a New-born Child.* [Practitioner, March, 1870.]

Dr. de Belina gives the details of a successful case of transfusion in a child under these circumstances. A Russian lady, in the eighth month of her pregnancy, was severely shaken by a collision on a railway. The pains of labor immediately supervened, and, on removal to an adjoining hotel, Dr. Belina was called in. He found the membranes ruptured, the os fully dilated, and the head presenting. Sharp expulsive pains soon came on, but, when the head was born, it was found that the neck was surrounded by two coils of the cord. It was found impossible to release them, and the cord was accordingly divided with scissors, and he endeavored to terminate the labor. Unfortunately, the evolution of the shoulders lasted for some minutes, and the infant became asphyxiated and violet. The cardiac beats were much enfeebled. For ten minutes he fruitlessly applied the ordinary means of restoring suspended animation. The beats of the heart became still feebler, and he determined on resorting to transfusion. The difficulty, however, here occurred that no one was willing to be bled for the sake of the child, and he therefore employed the blood flowing from the placenta of the mother, which was spontaneously discharged. The blood was defibrinated with a small piece of whalebone, and thirty grammes (about an ounce) was injected into the umbilical vein in several portions by means of a glass syringe. Immediately after the injection the infant shivered and presented fibrillar contractions of the muscles of the face, at the same time drawing a long breath. The beats of the heart became stronger, and the respirations regular. The next morning it took the breast, and is now a healthy child, nearly a year old.—*Gazette Médicale de Paris*, No. 2, 1870.

5.—*Idiopathic Gangrene of the Genitals in Infancy.* By J. W. Brooks, M. D. [Chicago Medical Journal, November, 1870.]

Dr. Brooks here gives the particulars of five cases of this formidable and rare disease. They are too lengthy to transfer to our pages; we must therefore content ourselves with only an allusion to them. Two of the cases occurred in the same family, both proving fatal after very extensive destruction of the soft parts, extending into and involving the pelvic bones. Dr. Brooks observes:

It will be observed that this fearfully fatal disease declared itself without apparent cause in perfectly healthy children; all but one were little girls, and all were between one and four years of age. Neither of them had suffered from fever or eruptive disease of any kind; nor was any epidemic of any kind prevalent, or declared itself soon after, except in a single instance, and that was in 1849, when a form of choleroid disease prevailed, and that only among adults. The parents of all the children were very

healthy. A singular coincidence was the commencement of each case in the month of September. I have seen partial gangrene of the genitals succeeding to measles, scarlatina, diphtheria and typhoid fever, but at the autopsy emboli were found in the supplying arteries of the parts. But there was nothing of the kind found in either of these cases; on the contrary, however, great fluidity and putrescence of the blood. With one exception, every case has proved fatal, and that I do not regard as exempt from danger. These cases seem to have been induced by a septic poison *sui generis*.

Miscellaneous and Scientific Notes.

Maltine in the Cure of Dyspepsia.—The excellent results obtained by Dr. Cantaret with maltine in the treatment of dyspepsias, serious and of long standing (see *La Nuova Liguria*, 1871, No. 3, p. 36), induced Prof. De Renzi to institute a series of experiments for the purpose of confirming the effects attributed to this preparation (*La Nuova Liguria Medicale*, Anno xvi., No. 18, p. 275). The maltine was prepared at the pharmacy of the hospital, and previous to being prescribed it was tested by direct chemical experiment as to its readiness and efficacy in the transformation of starch into sugar. It was administered in five cases; in four of them combined with pepsin, in one only by itself. In order better to judge of the advantages obtained in each case, the author regards it as opportune to present a brief description of them. The first two were G. M., aged thirty-three, and D. R., aged twenty-two; the first affected with chronic pulmonitis at the apex of the left lung, the second with chlor-anæmia. On admission they were both treated, with good effect, against all the symptoms, excepting the single phenomenon of dyspepsia, which remained obstinately rebellious to all treatment. Under these circumstances the maltine was given with pepsin, and already, in the brief space of four days, a sensible amelioration was present. The dyspepsia diminished gradually, and both patients were discharged in the best condition. The third and fourth cases were those of P. R., aged forty-seven, affected with bronchitis and anæmia; and T. A., aged eighteen, with chlorosis, gastralgia, and dyspepsia. The bronchial disorder having been relieved, the first patient

was subjected to maltine alone, and in a very short time the dyspepsia, which had persisted since her admission, was completely relieved. Similar results were obtained in the case of T. A., in which the pepsin was combined with maltine. The patient was dismissed, after twelve days, perfectly cured. The last case refers to a certain T. M., at present in bed number 187, affected with chronic pneumonia; in this case, the treatment used had relieved the most important symptoms, such as cough and vomiting, but the disorders of digestion had remained. At first three pills of maltine, with pepsin, were given during the day, and with so much advantage to the patient as to restore that important function.

The formula employed was as follows:

℞. Maltine centigr. xv.
F. pil. No. 3.—One pill before each meal.
℞. Maltine centigr. v to x.
Pepsin " c to cl.
F. doses No. 2.

The following account of the mode of preparing maltine, and its properties, is taken from the *Bull. Gén. de Thérapeut.*, 1870, pp. 220–226:

Maltine, first announced in 1833 by Payen and Persoz, and called *diastase*, is best procured by macerating sprouting malt in double its weight of water, for twenty-four hours, at a temperature of 40° C., replacing the filtered portion with a double volume of alcohol, filtering the yellowish-white amorphous deposit of maltine remaining on the filter, and drying at 40° C. In this manner from one kilogramme of sprouting grain, five to six grains of maltine should be obtained.

Maltine, which is very little soluble indilute alcohol, and insoluble in absolute alcohol, is precipitated from its watery solution by the salts of potassa and barytes. Alkaline carbonates and bicarbonates precipitate it also; an excess, however, redissolves the precipitate. Salts of lead, mercury, cadmium, and tannin, form with maltine insoluble combinations, and arrest the ferment action of maltine. The same results with strong acids and caustic alkalies, while weak acids, dilute alcohol, essential oils, and organic salts, do not appear to arrest its action, and alkaline salts assist it. The experiments of the

author on the artificial digestion of starch by maltine showed that this occurs, completely, only with cooked starch; that, further, the starch must be diluted with ten times its weight of water; and, finally, that the soluble power of maltine varies with the various forms of starch. The favorable temperature of the digestion is 35° to 40° C.; 0.05 gr. of maltine produced from 25 grs. potato-starch, cooked in 400 grs. water, in twenty-four hours, 11.0 grs. of sugar. Larger quantities of maltine do not hasten the process, and less leaves it incompleted. The entirely similar action of ptyaline, already noticed by previous authors, suggests to Dr. Cantaret that there is no difference between the animal and vegetable ferments, and he does not hesitate, therefore, to call maltine vegetable ptyaline, and to employ it in the treatment of "dispepsie salivaire." Dr. Cantaret gives maltine in the form of pastils, each of which contains 0.05 gr., in doses of one, two, or three after meals. Besides the pastils of pure maltine, he employs others to which 0.05 gr., magnesia usta is added. The author remarks that in his experiments out of the body, the pure maltine is more active than the pastils which contain magnesia; but, on the other hand, he has obtained, in practical use, better results from the latter than from the former. He explains this difference thus: that the free acids of the stomach combine with the magnesia, and that thus the ferment action of the maltine, which is checked by the presence of the magnesia, is allowed free play. The author ends with the description of two cases of "dyspepsie salivaire" which were thus treated, with excellent results.

True Hermaphroditism in Man.—Dr. Heppner is of the opinion (*Centralblatt Medizinischer Wissenschaften*, June 3, 1871) that true hermaphroditism occasionally occurs, aside from the typical hermaphroditism of lower animal forms, even in species where otherwise an absolute separation of the sexes is characteristic, and even in the more highly organized vertebratæ; and the hermaphroditism in fact occurs in two forms, either as the so-called hermaphroditismus lateralis, in which the genitals of the right side are developed according to one sex, those of the left according to the other; or as the so-called

hermaphroditismus androgynus, which Heppner calls hermaphroditismus bilateralis, in which, on the right as well as on the left side, male and female germ glands, that is, testicle and ovary in pairs, are eventually formed with their reciprocal excretory passages and dependent organs. Also in individuals of the human race similar appearances, resting upon anatomical investigation, have several times been observed. The author gives a narration of the cases to be found in medical literature, and a summary sketch of the contents of several publications, of which ten cases, according to the descriptions and in the judgment of the authors, were to be regarded as hermaphroditismus lateralis, and seven others as bilateralis. The author, nevertheless, comes to the conclusion that the whole of these cases are valueless for an absolute confirmation of a true hermaphroditism in man; partly because of imperfect observation, especially microscopic examination of the supposed ovaries and testicle, partly because of senile or diseased degeneration of these organs, by which the microscopic investigation proved fruitless. The author himself, however, found in a St. Petersburg collection a preparation, from a child two months old, which he recognized as a very clearly-marked specimen of true hermaphroditismus bilateralis. The external genitals presented an almost complete male type. There was, in fact, an empty scrotum with its raphe, and a penis, several centimetres long, composed of the three corpora with foreskin and glans, but hypospadic. The sulcus on the under surface of the penis was continued in a small fissure at the upper end of the raphe scroti; and behind this, in a closed canal which, quite similar to the fashion of the male urethra, passed along the posterior half of the length of the lower corpus cavernosum; then in a pars membrana, and a pars prostatis, with a circumjacent, well-developed prostate, and finally into the bladder. In place of the folliculus seminalis there occurred several longitudinal fissures, and between these the openings of the glandulæ prostaticæ. Cowper's glands were not discernible. From the above-described urino-genital canal, however, there passed backward and upward, a second canal of the character of the female genital passage. At the under surface of the pars membrana, namely, near the pros

tate, there occurred a fissure three mm. in length, which led into a second vagina. The latter in its lower part was surrounded by the prostate, its mucous membrane being marked by delicate corrugated folds. At its upper part a uterus was attached, the cervical portion of which, penetrating into the cavity of the vagina, presented a true arbor vitæ; while the body on both sides was connected with well-developed tubes and broad uterine ligaments. In the latter, on each side, ovaries of an infantile size were attached in the ordinary manner, and proved as such under the microscope; for there were found in them numerous young follicles in the usual stages of development. Besides these, however, and indeed beneath the external end of each ovary, at the free border of the plica infundibulo-pelvica, a testicle of an oblong, flattened shape, somewhat constricted in the centre, on the left side. These formations were characterized as testicles by their minute structure. Within a fibrillated connective envelope, and between the septum which was prolonged internally, the parenchyma consisted of a system of branching ampullæ which ran, mostly, vertically to the surface of the organ, and became doubled up like a sling, beneath the capsule; at the hilus, however, they passed on into larger canals, and thereupon into a rete vasculosum, surrounded by fine, strong, fibrous bands. The coats of the tubes consisted of a structureless membrane; their contents, of rounded, granulated cells of different dimensions. Joined to each testicle, immediately between it and the tuba, was an organ precisely like a parovarium, consisting of loosely-winding glandular tubes which converged toward the testicle; no true epididymis was as yet developed. Vasa deferentia and vesiculæ seminales were entirely wanting. Although so many essential parts were present, in this carefully-investigated case, toward constituting a true hermaphroditism, yet is it not complete. The performance of the functions of the male genitals would have always been impossible, on account of the absence of the seminal ducts; and similarly any conception, on account of the impossibility of passive coitus. Similar and still other obstacles would, in all the other published cases, have prevented sexual life. And as the external genitals in both the sexes are developed in a different

manner from the same embryonic status, any simultaneous capacity for male and female functions, and especially any such capacity for generation, would be hardly conceivable.

Cutaneous Anæsthesia.—It is maintained by Eulenberg (*Central. Med. Wissen.*, No. xxii., 1871) that the different functions of the cutaneous nerves of sensation (touch, general sensibility of the skin, sensibility to pain) may be suspended singly or together in varied combinations; and, indeed, the paralysis of one function may coexist with the increase of the others; e. g., analgesia with a sharpening of the sense of touch. The paralyzing of the sense of touch may include the different subvarieties of this sense (sense of pressure, sense of heat, sense of locality) singly or combined; in single paralysis, the term partial paralysis of the sense of touch (not partial paralysis of sensation) is a passable one. The different sensations, which are designated as general cutaneous sensation, are also only partially paralyzed (partial analgesia). If we suspect a cutaneous anæsthesia, a comprehensive objective examination of the various functions of the cutaneous nerves of sensation is called for; the subjective results have only a subordinate value. Complete analgesiæ, which depend on disturbance of conduction at any point of the course of the nerve, may coincide with eccentric sensation; the latter, however, can never occur as long as the last central nerve-terminations are destroyed. The older writers adduce as characteristic phenomena of anæsthesia, that the temperature is depressed, the circulation retarded, and that there is a lowering of assimilation. Such phenomena often do occur, but it is an entirely false assumption of the facts to regard the anæsthesia as the cause of the disturbances in circulation and assimilation. The same error is found by the so current presentation of the relation between paralysis and muscular atrophy, when the latter are assumed as consequent upon the former; in this assumption, it is entirely overlooked that a great mass of the cases of paralysis, even of very long standing, never produce true atrophy of the paralyzed muscles; while in other cases the highest degree of atrophy follows almost in the footsteps of the paralysis; and in others again, simply atrophy, and no genuine paralysis,

occurs. Upon these matters, more light has been thrown, especially by electric exploration, while on the other hand, as regards the anæsthesiæ, the old errors still exist. If, upon suspended function of the nerves of sensation, local depression of the circulation and nutrition were consequent, then the nerves of sensation in their integrity should exercise a regulating influence over the circulation and nutrition; for this assumption there is not the slightest ground. Far more probably, these depend solely upon the vaso-motor, in other words, the trophic nerves; as in a paralysis we look for a laming of the motor nerves, so in derangement of nutrition we must look to the trophic and not the sensitive nerves. Clinical observation shows, when undertaken without prejudice, the necessity of this separation: in many anæsthesiæ we find trophic disorders, in others they are absent; very severe anæsthesiæ may exist for a long period, without a trace of trophic disorder, while slighter cases are very early combined with cutaneous malassimilation. On the other hand, the trophic changes, frequently the anæsthesiæ or the former, appear without being followed by the latter, or they are combined with hyperæsthesiæ and neuralgiæ. An accurate analysis shows that it is undoubtedly those anæsthesiæ which belong to the peripheric portion of the apparatus of sensation which most frequently coincide with disturbances of circulation and nutrition in the paralyzed parts (in neuritis and mechanical lesions); these disorders are much more rare in spinal, and rarest in cerebral anæsthesiæ; the anæsthesiæ of the highest grade consequent upon hæmorrhagia cerebri are rarely connected with serious disturbances in cutaneous nutrition; as little as apoplectic paralysis is with atrophy of the muscles. Similar results are shown by physiological experiment: section of the posterior roots of the spinal cord above the spinal ganglia produces simply anæsthesia; below the ganglia, on the other hand, anæsthesia and disorder in nutrition. We must therefore assume that, with the originally purely sensitive posterior spinal roots, trophic-nerve fibres springing from the ganglia are associated. In all mixed nerve-roots there are besides vaso-motor nerve-fibres contained which are brought to them partly from the spinal cord, partly from the sympatheticus through

the rami communicantes. The disorders of circulation and nutrition which occur in anæsthesia arise, therefore, not through affection of the sensitive nerves, but through the simultaneous affection of vaso-motor and trophic nerves. Many investigators have supposed that in suspended sensation influences are projected which, being in the normal state centripetal, effect in a reflex way the standard (tonic) excitation of the vaso-motor nerve, and thus a reflex paralysis of the vessels is produced in anæsthesia. This hypothesis, however, is not proven, and against it militate those experiments which go to show that the normal, medium, vascular tone is not a reflex but a direct (automatic) one, and is independently generated in the central origin of the vaso-motor nerve-fibres.

Treatment of Syphilis by Inunctions.—Sigmund is of opinion (*Wien Med. Press*, No. xii., 1871) that . . . the topical treatment of local syphilitic affections should by no means be lost sight of. The internal treatment alone does not suffice. Syphilitic products occurring in the cellular tissue and in the skin-papules and pustules vanish under the use of local baths, fomentations and inunctions, more rapidly and more thoroughly, and at the same time their purulent degeneration is usually thus avoided. (For this purpose he uses corrosive sublimate, white and red precipitate and gray plaster.) In cutaneous sores, a concentrated solution of cup. sulph.; subsequently, as soon as healthy suppurating surfaces and edges are obtained, an accurately-applied strip of gray plaster, which is to be renewed according to the amount of suppuration. These methods give better results than the caustic applications, the salves of red precipitate, or the iodine-treatment. The sulphate of copper indeed causes the same pain as other caustics, but it penetrates the infiltrated tissues more completely and separates them more sharply from the healthy parts. The diseases of the nose, the pharynx, and the larynx, call for an accurate local examination. The author has repeatedly been obliged to perform tracheotomy (the syphilis and the inunctions have no influence upon the course of the wound); he advises that this operation should not be so long delayed until the severest symptoms set in, for the previsional operation has much better results. After

the syphilitic affection of the larynx is healed, the canula may be removed while the inunctions are still proceeded with. Finally, Dr. Sigmund insists in all syphilitic cases, even when the cavities and canals in question do not appear to be diseased, upon scrupulous cleanliness of the parts.

Syphilitic erythema and follicular exudations of the mucous membrane of the throat are often regarded as simple catarrhs, their obstinacy first arousing suspicion. Ulcerations seldom are misunderstood. Both states demand astringents in various forms (calc. chlorid., calc. hypermangan., acid. carbolic.). In affections of the lips, painting with a solution of corrosive sublimate in alcohol is of better service than the solid nitrate of silver, while the former acts much less upon the elasticity of the skin than the latter; after the application with the brush a layer of cotton-batting should be placed upon the surface, and the lips should be kept at rest for a few hours. For the anus, perinæum, entrance to the vagina, vicinity of the urethra, corrosive sublimate dissolved in collodion and ol. ricini; in moist scales and papules, and in granulating surfaces, empl. hydrarg. et emplas. saponat. smeared on soft linen. For affections of the gums, a solution of corrosive sublimate applied with a brush; it does not affect the teeth, but attacks the fillings when not of gold. The softened gums may produce a tedious syphilitic affection of a low grade; in such cases dusting with alum, zinc, sulphur, tannin, etc., is well. In painful affections of the mouth, inhalation of chloroform and sulphuric ether daily, two or three times, until a slight narcosis is produced, will prove useful.

Endometritis Placentaris Gummosa.—Dr. Slavjansky, in the *Prague Quarterly*, cix., 132, describes a case of partus præmaturus in a mother with syphilis of several months' standing, occurring in the Prague Lying-in Clinic. The fœtus was born after a gestation of thirty weeks; its death, however, had taken place as early as the twenty-second week. The mother suffered, at the time of the birth, with numerous broad condylomata on the labia majora and anus. Neither fœtus nor cord showed any thing abnormal, by which to explain its death; the cause was rather to be looked for in a dis-

case of the placenta. The placenta materna was thickened in spots, and appeared generally as a homogeneous, light, opaque membrane; this was with difficulty, and only in part, separable from the placenta fœtalis; between the cotyledons, the enlargements were most developed. They appeared, upon section, like wedge-shaped, knobby formations, penetrating into the placenta fœtalis, and were thus found in three places; the smallest was 3 mm. and the largest was 15 mm. in diameter. The cut surface of the knobs presented two separate layers, an outer peripheric, slightly fibrous, firm, and grayish; and an inner, softer, yellowish centre, which in spots appeared like a cheesy mass. Of the same nature were single yellow spots embedded, sparingly, in the grayish peripheric layer. The borders of this yellow centre did not contrast strikingly with the surrounding tissue of the grayish layer, and the transition of the knobby formations in the tissue of the placenta fœtalis, inspected through the lens, presented no sharp outlines, but there were to be seen numerous outshoots of the gray layer penetrating into the placenta fœtalis, so that, by subdividing and anastomosing, they formed a net-work, in which the spongy tissue of the placenta fœtalis was embedded. Toward the periphery of the knobs the network was more open, and the walls thinner. A similar network, only less developed, occurred also at the thickened portions of the placenta materna which were not knobby; the largest and firmest of the gradually anastomosing and thinning framework could be traced only to the commencement of the middle third of the entire thickness of the placenta. The microscopic examination showed the tufts of the placenta, in places, slightly degenerating to fat; in others, healthy. The enlarged (not knobby) places were composed of an upper layer of large decidual cells, and a lower, doubly as thick, and coarse-fibred layer of connective tissue, with quite a number of embedded cells, round and spindle-shaped; this same structure obtained in the offshoots as well as the peripheric layer of the tubercles. The centre of the latter, and the yellow cells, were composed almost entirely of detritus; only here and there were traces of fibres and cells to be found. The transition of the gray layer into the decayed

centre was formed by numerous and different cells, among which, however, the round predominated; between them lay an insignificant quantity of finely-fibred, intercellular substance.

The *post-mortem* examination showed the author's opinion to have been correct, that the placental disease which had produced the death of the fœtus was to be regarded as gelatino-syphilitic. The author presents this case as parallel to the only other on record, that of Virchow ("Morbid Growths," vol. ii., endometritis syphilitica).

Pathological Anatomy of Rabies Canina.—Although, says Prof. Rudnew (*Centralblatt Medizinische Wissenschaften*, No. xxi., 1871), medical literature is sufficiently copious on the subject of hydrophobia, the pathological anatomy of the disease has been so little studied that it is a matter of wonder how those professing to understand canine madness set to work to recognize the disease in the dead body. It is generally assumed that the presence of foreign bodies, such as straw, hairs, and such like, is an indication of the disease. In Prof. Rudnew's investigations he was convinced that the presence of such foreign substances is by no means a constant attribute of the disease, and that it cannot at all be regarded as a diagnostic sign of hydrophobia. Prof. Rudnew examined microscopically all the organs of the body of dogs dead of, or killed during the attack of, rabies. He convinced himself that hydrophobia, like almost all infectious diseases, is connected with a profound disturbance of the more important organs, so that hydrophobia may be asserted or denied with exactness according to the changes present. In this preliminary article he confines himself to the changes found in the kidneys only. Among the many bodies examined, in no single one were the kidneys found healthy. In every case a high grade of parenchymatous inflammation of the kidneys was present, the peculiarity of of which was, that the changes of the epithelium of the uriniferous tubes was generally evenly distributed over the entire organ—the cortical layer, as also the pyramidal layer, was invaded, so that all the conditions necessary for the production of uræmia were at hand. It is therefore extremely probable

that many of the symptoms of hydrophobia during life may be regarded as uræmic. A second peculiarity of the parenchymatous inflammation of the kidneys in rabies is, that the changes in epithelium have generally a degenerative character. In the highest stage of the disease it was found that the uriniferous tubes no longer contained any trace of epithelial cells. The spaces of the canals were filled with a granular, fatty, degenerated mass. Where these higher stages of kidney-disease are present, the disease is fatal. Prof. Rudnew promises further communications on this subject.

The Action of Hydrate of Chloral.—We find in the *Gazette Médicale de Paris*, of June 5, 1871, the following summary of investigations on this subject: 1. The action of the hydrate of chloral on similar organisms is different from that of chloroform. 2. This action is peculiar to this substance, but it may be regarded as the result of the two products of which it is compounded, principally in the contact with the blood, viz., chloroform and formic acid. 3. The action of hydrate of chloral on the animal organism is different from that of trichlor-acetic acid, and trichlor-acetate of soda which are formed of chloroform and acetic acid, while at the same time comparable to it. A portion of the chloroform, formed by the action of the alkaline carbonates of the blood on hydrate of chloral, is eliminated by the pulmonary passages—a portion of the formic acid is found in the urine in the form of formiate of soda. To determine practically the effective action of hydrate of chloral, as experience has shown it, we must distinguish three degrees reached gradually and successively, by increasing doses but varying with the individual. 1st degree: Feeble soporific action and slight sedation of the sensitive nervous system, perhaps accompanied by intermittences of a peculiar agitation comparable to that produced by certain dreams. 2d degree: Energetic and imperious soporific action with diminution of sensibility; at this period corresponds a calm sleep of variable duration, but without apparent disturbance of the organic functions: by successive doses administered as soon as the action of the first have entirely disappeared, the sleep may be prolonged for a relatively very long period. 3d degree:

Anæsthetic action with complete loss of general sensibility and muscular resolution; we have almost always seen death supervene when we had really reached this period, and the reason is easy to give: a large dose of hydrate of chloral has been given, and we have not the power at a moment's notice to subtract the organism from influence of the medicine acting progressively toward its complete transformation and elimination.

Accidents caused by extracting Teeth.—Dr. Delestre, in the *Gazette Méd. de Paris*, No. xiv., 1871, gives an account of the numerous accidents caused by extraction of teeth. He classifies them as follows: 1. Those referable to the tooth itself, or the neighboring teeth: fracture of the teeth; luxation and fracture of the neighboring teeth; extraction of the germ of the second dentition. 2. Those that affect the maxillary bones: fracture of the alveolar edge, and complete fracture; luxation of the jaw; lesion of the maxillary sinus. 3. Those affecting the soft parts: tearing and stripping up of the gums; contusion and wounds of the lips; of the cheeks and tongue; emphysema. 4. Secondary accidents: hæmorrhages, fluxes, phlegmons, and abscesses; teeth entering the digestive and respiratory passages. 5. Sympathetic affections: neuralgia, tetanus, accidents affecting the organs of sense; accidents to pregnant or to nursing women, and at the menstrual epochs. We will notice particularly only the disturbances of vision, consequent upon changes in the teeth, and operations on those organs. This question has already been studied by Delestre in a memoir presented to the Academy (session of February 17, 1869). He reports several observations which tend to prove the existence of visual troubles from this cause; he calls attention to the fact that odontalgia is accompanied frequently by a flow of tears and redness of the conjunctiva, with pain, and winking of the lids. In this case there is, in the first place, an excitation of the nervous filament belonging to the diseased tooth (branch either of the superior maxillary or inferior maxillary nerve); this irritation of one part of the trifacial nerve is transmitted to other parts, and particularly to the ophthalmic branch of Willis; hence, flow of tears, redness of

conjunctiva, etc. Herman Schmidt explains the passing disturbances of accommodation, which accompany the pains in the teeth, on the same side, by the increase of the intra-ocular pressure resulting from a reflex irritation of the vaso-motor nerves of the eye.

Dr. Sayre.—We learn that Dr. Sayre, of this city, is now on his voyage homeward, having visited during the past summer the principal medical centres of Europe. In our July number we noted his having lectured in London upon his favorite topic of hip-joint disease. Later English medical journals contain very flattering notices of Prof. Sayre, and the plan of treatment of joint-diseases advocated by him. The *British Medical Journal* reports at length his lecture delivered at the Children's Hospital in Great Ormond Street, and remarks editorially: "This is the second time that an American surgeon visiting this country has brought to the cognizance of the profession here what claims to be a distinct improvement in surgical practice. . . . The excellent work which is being done by our American brethren in medical and surgical practice is too little known in this country. The short visit of Dr. Sayre has, we believe, been gratifying to himself, and welcome to the profession here. He has been warmly received by the most eminent surgeons, and his vivid enthusiasm and natural force of character have produced a very favorable impression."

This friendly reception of Dr. Sayre will be gratifying not only to his friends but also to his medical brethren here, as one more evidence that the profession in America is taking a position that commands the respect of its co-workers in other countries.

The Treatment of Pneumonia.—The *Gazette Médicale* contains a series of articles by M. Papillaud on this subject. The following are the conclusions arrived at: 1. Bleeding is hurtful in the treatment of malignant or adynamic pneumonia. 2. It is also injurious, whatever may be the form of the pneumonia, in feeble or debilitated subjects. In robust subjects it may be serviceable as an expedient for the relief of the em-

barrassed respiration, but opium may render the same service without producing the inconveniences consequent on the loss of blood. 3. In the treatment of pneumonia, tartar-emetic is a remedy of the first rank, by reason of its antipyretic, antiphlogistic, and decongestive action; but there is no need to raise the dose beyond from 10 to 20 centigrammes, nor to continue its employment for a longer period than from two to four days. 4. Alcoholic liquids, in doses varying from 30 to 100 grammes, according to the subjects, are medicinal agents which, whether by aiding organic combustion or from other as yet little known modes of action, powerfully contribute to the resolution of pneumonia. 5. A formula combining these three medicinal agents—opium, antimony, and alcohol—is that which will best meet all the ordinary indications in the treatment of pleuro-pneumonia.

Are Water-beds useful?—Dr. Mayrhofer, in *Wien Med. Pr.*, No. 19, 1871, discusses this question. He believes it is a false assumption that a patient lies easily on a bed whose particles are readily displaced; he lies softly only on a bed whose particles closely approximate upon pressure, and at the same time have the power of returning to their previous distention, on the removal of the pressure. The water-bed therefore has been adopted under false impressions, and experience has taught the author that all wounded patients pine on such beds; furthermore there occurred in a few cases very extensive gangrene from the pressure. The water-bed should, therefore, be wholly cast aside. The object of the air and water beds is much more to distribute the pressure equally upon the surface supported, and thus to protect the otherwise threatened localities. For this purpose, however, the India-rubber sack should be only partially filled; then the patient will certainly not pine.

Treatment of Vesico-vaginal Fistula.—Dr. G. Torres, of Turin, reports, in the *Gaceta Med. de Granada*, a case of cure of vesico-vaginal fistula by the postural treatment suggested by Giordano, which consists in placing the patient in a position that shall prevent an accumulation of urine in that

part of the bladder in which the fistula is seated. This position is, for the majority of cases, a horizontal one with the external plane of the body. Dr. Torres cites a case in which a single cauterization with nitrate of silver, followed by the posture above alluded to, produced the closure of a fistula of one centimetre in extent. Prof. Giordano asserts that the posture alone will at times suffice to bring about a closure of vesico-vaginal fistulas. The case alluded to by Dr. Torres had existed only for about six weeks, and the recent date was doubtless a very favorable condition for the cure.

Spontaneous Generation.—At the late meeting of the British Association for the Advancement of Science, Dr. Charlton Bastian gave the details of some of his most recent experiments, the results of which led him to the conclusion that living matter might arise *de novo*, and that this living matter might go on to the development of certain common organic forms, just as surely as any speck of crystalline matter in a fluid might take on and assume certain definite characters which belonged to the saline substance in its crystalline condition. His experiments showed that living organisms had been found in fluids that had been exposed to a temperature higher than was sufficient to destroy germs.

The Bromides in Epilepsy.—Dr. Lutz, in the *Berliner Klinische Wochenschrift*, 1871, No. 18, states that he has employed the bromide of potassium in ten cases of epilepsy with good results. In three patients the attacks were entirely suspended for six months, in the remainder they occurred in much greater intervals. Lutz began with 1–3 grs. *pro die*, and increased gradually up to 10–20 grs. daily. The author found especially good results from the combination of the bromide of potassium with the bromide of ammonium. This seems to him a fresh proof that the bromine is the active principle. Also in nervous headache the bromine did good service. One case of enuresis nocturna was promptly cured.

A New Plessimeter.—Dr. G. Bufalini, in *Lo Sperimentale*, anno 32, 1871, recommends a new form of plessimeter of his

own. The instrument consists of a round plate of pine or cypress wood, of a diameter of 5 ctm., and which is so made that the fibres of the wood run vertically, and that the centre of the fibres corresponds with the centre of the instrument. The surfaces of the plate are convex, so that it has a thickness of 5 ctm. in the centre, and at the edge 1 ctm. The latter contains two slight depressions for the fingers. The advantage of this instrument over others is its easier applicability to the body, and its better conduction of sound.

The General Hospital of Vienna.—This institution contains 2,000 beds. In 1869 the admissions were 20,214—viz., 12,789 men and 7,425 women. For the last ten years the mortality has varied between 11.4 and 13.3 per cent., except in the cholera year (1866), when it rose to 14.4 per cent. The number of operations performed in 1869 was as follows: 95 amputations, 36 resections, 187 removals of tumors, 10 lithotomies, 9 lithotrities, 7 ovariotomies (6 deaths), 305 operations for cataract, and 249 iridectomies. The total expense was £60,000.—*Lancet.*

A Pelvis Committee.—Among the useful works projected by the Obstetrical Society, says the *Lancet*, is the collection of specimens of the pelves (male and female) of the various races, together with, if possible, fœtal heads at term; also the collection of abnormal female pelves, or casts; the collection of histories, drawings, or photographs, and descriptions of abnormal pelves, where it is not possible to procure the pelves or casts of them. To carry out this work, a pelvis committee has been appointed.

Crystallized Aconitine.—According to the *Gazette Hebdomadaire* of August 4th, MM. Duquesnol and Gréhaut announce that they have obtained aconitine in a crystallized state. It is only slightly soluble in water, but dissolves in alcohol, glycerine, ether, benzine, and especially chloroform. It is decomposed at a temperature of 138° C. It is poisonous in almost infinitesimal doses, and in its effects on animals is very analogous to curarine.

A New Lady Doctor.—The *Lancet* announces that Miss Putnam, of New York, has undergone the very strict examinations for the doctor's degree in Paris, and has passed very creditably. This is the second case in the Paris Faculty, the innovation being made quietly, while elsewhere angry discussions intervene.

The Naples Anglo-American Hospital.—This hospital, which has been in successful operation for more than thirty years, is now to be closed, the managers having received a peremptory order to that effect from the Neapolitan authorities.

The German Scientific and Medical Association.—The forty-fourth annual meeting of this association was held in Rostock, from the 18th to the 24th ult. The attendance was large.

Dr. Maudsley on Insanity.—At the twenty-sixth annual meeting of the Medico-Psychological Association, held in London, August 3d, Dr. Maudsley, the President, delivered an address on insanity, taking up successively its prevention, its management in private houses and asylums, and the abuse of sedatives in its treatment. We take the following synopsis of his address from the *Lancet:*

Dr. Maudsley remarked that the question of the prevention of insanity, although a most important one, had hardly ever been seriously propounded. Luckily for us, insanity, unlike some other fearful diseases, could not be conveyed by man to his fellow-man by infection or contagion; but, on the other hand, it was of all diseases the one most likely, perhaps, to be inherited by one generation from that preceding it. Then, again, it was a disease of so fearful a nature, affecting the highest and most distinctive of man's attributes—mind—that the sufferer from it was regarded as having really sustained a fall from man's high estate, and his relatives accordingly often strove their hardest to conceal the fact. Now, if we had certain animals who were deficient in what ought to be their chief characteristics—greyhounds, for instance, who could not run fast, or race-horses who were deficient in speed and staying-power—should we make choice of these for the purposes of propagation? Certainly not. Then the question arose, ought we to permit men in whom there was a tendency toward mental alienation to marry? This was a most difficult

question, by reason of the different degrees of liability to insanity which necessarily existed in different individuals. Then, again, the phenomena of atavism and the alternation of neuroses very much complicated the question. For instance, the son of a madman may escape, and the grandson be utterly insane; and the offspring of epileptic or neuralgic parents may show very strong tendencies toward insanity. Again, it had been remarked that the offspring of the insane had not unfrequently been men of great genius, and hence the question arose whether, by forbidding the marriage of a man with tendencies toward insanity, we might not be depriving the world of a mind which would more than compensate for innumerable mental aliens. The descendants of the insane are often very original thinkers. They explore the little-trodden paths of knowledge, they have often indomitable energy, and are careless of all obstacles. Dr. Maudsley thought that, if a man had actually had an attack of insanity, we ought to use all our powers of persuasion to prevent his marrying, but in other cases he did not recognize the utility of interfering. He thought that not much was to be done for the prevention of insanity by the prohibition of marriage, but that more could be done by the careful and scientific education of the children of the insane. No person predisposed toward insanity should be considered as a helpless victim to his fate. A man can, to a certain extent, by sheer force of his will, make his character grow to the ideal he sets before himself, and, undoubtedly, a great deal is to be done by the careful mental training of those predisposed toward insanity. The insane themselves, it is well known, have at times a great power of control over their actions; and, *a fortiori*, those who are merely predisposed toward insanity should be likewise able to exercise this control. Unfortunately, as a rule, children with an hereditary taint are always worse managed than other children, and are, therefore, doubly cursed.

With regard to the treatment of insane persons, Dr. Maudsley thought the fashion of at once dispatching a lunatic to an asylum should by no means be necessarily followed in all cases. Many cases recovered without ever being sent to an asylum, and many cases were on record which baffled all treatment while resident in an asylum, but rapidly recovered after effecting their escape. M. Comte was a notable instance of this. He was an inmate of Esquirol's asylum, but, managing to effect his escape, he recovered and wrote his famous work on "Positive Philosophy." On the whole, Dr. Maudsley thought that only in a very few cases was it absolutely necessary to send the patient to an asylum. The recovery of many patients was

retarded by the absence of "home influence," and the utter banishment from their friends and relatives which was entailed upon them. It was unfortunate that the treatment of the insane had become such a narrow specialty, and it would be an excellent thing if the state would authorize medical men to receive a very small number, say two or three, insane patients into their houses. He believed that patients placed in this position would be more likely to do well than those who were sent to larger establishments.

In treating of the third division of his subject, the use and abuse of sedatives, Dr. Maudsley began by seriously doubting if it were always a wise thing to stifle excitement, and whether a chemical restraint put upon the brain-cells was not often as injurious to the patient as a mechanical restraint imposed upon his limbs. He thought that sedatives were given far too recklessly; that, although they might relieve symptoms, they often only served to push the patient farther down the hill, and, as often as not, retarded recovery. He thought that the whole range of sedatives, including bromide of potassium and the hydrate of chloral, were all equally capable of being abused; that, by giving them, we often materially damaged the patient's general health, and, instead of curing, we often merely "made a solitude, and called it peace."

Fracture of the Patella.—Mr. Jonathan Hutchinson, in a recent clinical lecture on this fracture, made the following remarks on its character and treatment, which we take from the *Medical Times and Gazette:*

In most patients suffering from transverse fracture of the patella, if we examine the bone several hours or a day or two after the accident, we find the fragments separated from one another by a considerable interval, from a quarter of an inch to an inch. We also find, most likely, considerable effusion into the joint. In a few cases, however, scarcely any effusion takes place, and it is precisely in these rare cases that the broken portions of the patella never become separated to any appreciable extent. Those cases in which the joint does not become distended, and the fragments are not separated, are the most favorable of any as regards good union; the case will be unfavorable just in proportion to the *amount* and *duration* of the effusion—i. e., the extent and duration of the separation of the fragments. The farther the fragments are apart the more difficult will it be to bring them together, and the longer they remain separated the less likely are they to unite by bone. You will readily see, then, that the prin-

ciples of treatment are to prevent effusion if it has not occurred, to favor absorption of fluid which has been poured out, and to bring the fragments of the patella into close and permanent apposition. The plan which I invariably adopt, and which has been carried out in the case before us, is to put the limb on a straight back-splint, and by that means bring the lower fragment as high as possible, and by pieces of cross-strapping maintain it there; then to bring down the upper fragment by strapping and firm bandaging as near as may be to the lower fragment, and keep it there by readjusting the strapping as often as it gets at all loose. Many surgeons, after doing all this, proceed further to elevate the whole limb into the air, with the intention of shortening the distance between the origin and insertion of the rectus muscle. I never adopt this practice, because I believe it to be quite useless, and very uncomfortable to the patient. I do not for a moment deny that the origin and insertion of the rectus femoris muscle are brought nearer together by elevating the thigh, or by raising the body. I assert, however, that the muscle when left to itself is not in a state of constant contraction; but, on the contrary, that it very soon relaxes completely, and that, therefore, any arrangement for shortening the distance between its attachments is uncalled for. I repeat, also, what I have already mentioned, that it is not to contraction of the rectus but to synovial effusion that the separation of the fractured portions of bone is due, and that it is, therefore, useless to make any special provision for insuring the relaxation of the muscle. I am even of opinion that elevation of the limb may be injurious, for we place it in a constrained position, and I think that muscles when in positions of discomfort are more likely to take on irregular and violent action than when allowed to rest in their ordinary postures.

A few words as to the mode of repair in transverse fracture of the patella. I am inclined to think that bony union is not so rare as it is supposed to be. I have dissected one specimen of union by bone, and I have seen several cases in which I had not the slightest doubt that bony union had taken place. The most favorable cases, as I have before mentioned, are those in which no effusion occurs, or in which the effusion is comparatively slight, and disappears rapidly, and which are treated by prolonged rest in bed, these being the cases in which there is little, if any, separation of the fragments. When the fragments of the patella are separated widely, and for a long time, then bony union is very unlikely to occur.

Centenarian Longevity.—At the late meeting of the British Association, Sir Duncan Gibb, M. D. (*Medical Times and Gazette*), recorded the facts of four persons he had seen, and who had reached a hundred years of age. In them all the functions of breathing and circulation were performed with the most complete and perfect integrity, there being an absence even of those changes usually seen as the result of ordinary old age. The chest was well formed, and of fairly good capacity; the cartilages of the ribs were not ossified; the voice was good, clear, sonorous, and powerful, though a little cracked and tremulous in tone—its power depending upon the capacity of the chest and integrity of the lungs. The heart—the great organ of the circulation—was quite healthy, and free from the chief sources of trouble in old persons—namely, fat or its compounds. The circumstance, although it did not prevent moderate calcification of the blood-vessels, yet was a conservator of all the tissues of the body, and especially prevented the occurrence of those changes which tend to shorten life. There was an absence of the atheromatous changes commonly observed in old people. This explained the appearance of the countenance in all, and imparted a sort of silvery expression, with apparently great toughness of the skin, which the author deemed an essential peculiarity in persons over ninety. All the special senses were unimpaired except hearing. The eye was clear in all, the sight excellent, all could read ordinary type without spectacles; there was no arc or ring round the clear part of the eye, as observed in most old people. The sense of smell was good; none smoked, used snuff, nor chewed tobacco. The hearing was somewhat impaired in three; in one of the males it was so acute that he could hear the slightest sound. The mental faculties were active in all, the memory good. The general health was capital in all, appetite and digestion good—the latter, indeed, uncommonly strong; all possessed the good, sound teeth they had masticated with when young. From this it was readily understood their digestive powers were capital. Taking, then, the condition of mind and body presented by the four undoubted centenarians, it may be said that in all there was an absence of those changes usually observed in persons approaching the allotted period of threescore and ten. These changes have reference chiefly to the condition of the blood-vessels and other tissues which are so seldom found absent. Suffice it to say that complete composure of mind throughout life has had much to do with the condition of body permitting the attainment of such great longevity; there was no heredi-

tary condition, also, to interfere with Nature's laws under such circumstances. Climate does not seem to interfere with longevity, for centenarians are said to be numerous in Russia. To reach that age not only must the constitution be a naturally good and healthy one, but all the great functions of life must be performed without any impediment. If the special senses are coördinately good, they assist in keeping up the condition favorable to longevity. But there is one change antagonistic to extreme longevity, and it is the most important one—namely, the predominance of the atheromatous element which leads to those changes, in the blood-vessels especially, which close life at the natural period.

Relics of John Hunter.—The *Lancet* of August 12th has the following interesting reference to the former residence of John Hunter:

Mr. Frank Buckland has been an indefatigable searcher for relics of the greatest anatomist, physiologist, and surgeon, that England ever produced. Twelve years ago he found John Hunter's bones in the vaults of St. Martin's-in-the-Fields, and got them buried in Westminster Abbey; and he has lately been making a searching examination of the house and grounds that once belonged to him at Earl's court, Kensington, but are now in the occupation of Dr. Gardiner Hill. According to all local tradition, the house and grounds are very little, if at all, altered since the days that John Hunter lived there. The house was built by himself, and it is such as might have been expected—without the slightest attempt at effect or useless ornamentation. His favorite room was evidently the large one on the ground-floor, looking out on the park; Mrs. Hunter's rooms being doubtless up-stairs. All round the house is a covered cloister dug about six feet into the earth. This cloister probably served the double purpose of keeping the house dry, and of being a good place for keeping live-stock. Mr. Frank Buckland has no doubt that here many of Hunter's smaller animals used for experiments, such as dormice, hedgehogs, bats, vipers, snakes, and snails, for his researches on torpidity, were located; as well as hutches of rabbits, whose unfortunate fate it was to have their ears frozen to prove points connected with blood-circulation. The entrance into these cloisters leads through a very dark, subterraneous passage, at one end of which is a mysterious-looking door, leading into a small room, now used as a receptacle for rubbish. In a corner of this room there is a largish-sized copper boiler standing out of the wall. "If this old boiler,"

exclaims Mr. Buckland, "could only tell us what it had boiled!" *One* giant, we know, was boiled in it; for in 1787 John Hunter wrote to Sir Joseph Banks: "I have lately got a tall man. I hope to be able to show him to you next summer." This was, no doubt, O'Brien, the Irish giant, whose skeleton is now in the Hunterian Museum at the College of Surgeons. Close to the boiler are the old (now tumble-down) pig-sties, where, probably, John Hunter kept the little pigs which he fed with madder, so as to cause their bones to become red. The places where his cocks and hens, pigeons—that have become matters of history now—probably lived, and all his other animals, are described.

The Temperature in the Puerperal State.—Mr. Squire has published the results of a series of careful observations regarding the puerperal temperature. He finds (*Lancet*) that the temperature of the vagina rises before the catamenia appear, and quickly falls afterward. The temperature of the body is somewhat increased in the latter months of pregnancy. The commotion and efforts of natural labor, if not prolonged, do not seem greatly to elevate the temperature of the patient, even if accompanied with considerable agitation, heat, and perspiration. The temperature of the vagina appears to increase toward the end of labor. In one such case half an hour before delivery it was 99.9°, while only 97.8° in the axilla. In another case, more rapid but less severe, the vaginal temperature was 99.1° twenty minutes before the expulsion of the child, and exactly 99° ten minutes after. The temperature rises more in prolonged labor, and in proportion to the severity and duration of the muscular exertion required. In such cases a temperature of 100° to 101° is by no means infrequent, and 102° or more has been reached. It soon subsides after labor to the normal standard, generally in the first twenty-four hours. Sleep favors the gradual decline of temperature, and *vice versa*.

The well-known elevation of temperature in connection with the commencement of the function of lactation is illustrated by Mr. Squire. The commencement of this reaction is most regular. It attains a certain prominence forty-eight hours after the birth of the child. The termination of the reaction is very variable, and slight causes suffice to produce disturbances of temperature, such as a sore nipple, or a slight inflammation of the breast. In primiparæ the milk-process is more slowly settled, and the normal temperature is not recovered so soon or so reliably as in other cases where the process of lactation has become a habit. In two of the three

primiparous cases the temperature rose respectively to 102° and 104.37°. In the last case it is remarkable that a high temperature was maintained for twelve days without either the breast or its function suffering.

Mortality after Ovariotomy.—At a meeting of the Royal Medical and Chirurgical Society, held June 13th, as reported in the *Lancet*, T. Spencer Wells presented a statement of his fourth series of one hundred cases of ovariotomy. He divides them as follows:

Series I.—Cases in which ovariotomy was completed—100 cases: 78 recoveries, 22 deaths.

Series II.—Cases in which ovariotomy was commenced, but not completed—6 cases: 2 relieved or cured, 4 died.

Series III.—Cases where an exploratory incision was made —7 cases: 5 recovered from incision, 2 died.

He shows that the mortality after ovariotomy is steadily diminishing: Of his first 100 cases, 34 died; of his second 100 cases, 28 died; of his third 100 cases, 23 died; and of his fourth 100, 22 died. In this fourth series 44 have been in hospital, and 56 in private practice. In private practice the mortality was only 14 per cent., while in hospital it was 31 per cent. The author believes that the mortality in private practice may be taken as a guide to what may become the general average mortality after ovariotomy, and he is convinced that it may be reduced to about 10 per cent. without excluding those extreme cases where the operation is performed as a forlorn hope.

Dr. West, after congratulating Mr. Wells on his signal success, pointed out that the great number of errors fallen into were from not bearing in mind all the precautions to be taken to avoid mistake. We should fall into few errors of diagnosis if we took all the precautions laid down by Mr. Wells. He took the opportunity of publicly acknowledging his mistake in opposing the operation, which nevertheless would never have been the boon to society it now is had it not been for the pains bestowed on its perfection by Mr. Wells. It was not mere dexterity which was required, but to be very sure of what had to be done and what dangers were to be avoided. Sometimes he thought the adhesion of a quondam opponent had its value.

Tissue Changes during Fasting.—We are indebted to the *Lancet* of June 10th for the following report of the investi-

gations communicated by Prof. Seegen at a recent meeting of the Naturwissenschaftlichen Klasse of the Vienna Academy of Sciences:

The subject of the experiments was a young girl, who, in consequence of a stricture of the œsophagus, was only able to consume very small quantities of nourishment. During a whole month the daily ingesta amounted to but 35 grammes of milk, and about 20 c.c. of water. A teaspoonful of this mixture was taken at intervals of about an hour. After lasting for four weeks the difficulty of swallowing gradually disappeared, and the quantity of milk swallowed rose to 210 grammes per diem. The most important results obtained were the following: 1. The quantity of urine excreted daily amounted to 185 c.c. It was of very dark color, possessed a strong acid reaction, and frequently deposited a considerable quantity of urates. 2. The amount of urea excreted daily, on an average of twelve days, was 8.9 grammes=4.1 N. The amount of N. ingested with the milk was 0.29 grammes; the excess of N. excreted, therefore, amounted to 3.8 grammes. This quantity of nitrogen is contained in about 25 grammes of dry albumen, and the patient must thus have used up that weight of the dry albumen of her own body. The chief tissue furnishing this would of course be the muscles, and if that amount of dry albumen be calculated as coming from fresh muscle, 112 grammes of the latter would be used up. 3. The excretion of water is not covered by the water of the metamorphosed tissue. The organism, therefore, is drier or poorer in water during fasting. 4. With increased supply of food the excretion of water through the urine rose, while the excretion of urea remained almost unchanged. 5. The metamorphosis of the albuminates during fasting, so far as they are represented by the excretory products of the urine, bears the proportion to the normal metamorphosis of 1 : 4, or 1 : 5.

Dr. West on Chorea.—In the *Lancet* of June 10th we find an abstract of Dr. West's recent lectures on disorders of the nervous system in childhood, from which we quote the following remarks:

There are two forms of chorea over which mental and moral culture have a most salutary influence. In two classes of cases it is inapplicable—those of partial chorea, and those in which movements are very violent. In the latter case splints on the legs and arms, and swathing the body completely in a soft bandage, will often, by restraining the movements, greatly diminish the resulting fatigue. But between these

two there is a large intermediate class, over which moral culture and regulated movements exercise a remarkable influence. A great drawback to success is the difficulty of arousing the will to activity. Hence gymnastics are of service in proportion to age, and are more useful when practised in a class, than when carried on alone. Music, or a simple chant, in time with which the movements can be made, helps to fix the attention and to expedite the cure. Of "specific" remedies Dr. West has been able to find none which seemed to him to possess such a character. The whole class of antispasmodics—henbane, belladonna, conium, chloral, bromide of potassium—had no other effect than to cause sleep. Tartar-emetic in large doses seemed of considerable service in some severe cases with dry skin. Strychnine had not seemed to him to merit the high encomiums Trousseau passed upon it, and its use is not free from danger. The only remedy really useful, and that only in exceptional cases, is the sulphate of zinc, given in increasing doses from one to twenty grains. It had effected considerable good in some cases in which other remedies had failed, and in which there was no distinct indication for the use of this or that remedy.

Modifications of Human Milk.—At a recent meeting of the Académie des Sciences, says the *Medical Times and Gazette*, M. Decaisne read an interesting paper on "The Modifications which Human Milk undergoes in consequence of Insufficient Food." He observes that most of the observations that have hitherto been published upon this subject have been made on animals, but the siege of Paris has furnished him with the opportunity of examining it in women. The present paper is based upon an examination of the milk of forty-three suckling women living upon insufficient food, and it concludes as follows: 1. The effects as observed in women are very analogous to those produced in animals. 2. They vary according to constitution, age, hygienic conditions, etc. 3. Insufficient alimentation always induces, in varying proportions, a diminution in the amount of butter, casein, sugar, and salts, while it generally increases that of the albumen. 4. In three-fourths of the cases the proportion of albumen was found to be in an inverse ratio to that of the casein. 5. The modifications in the composition of the milk by means of a reparative alimentation are always manifested in a remarkable manner in four or five days.

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ART. I.—*Remarks upon the Diagnosis of Ovarian Tumors from Fibro-cystic Tumors of the Uterus.* By CHARLES C. LEE, M. D., Surgeon to the Charity Hospital, formerly Surgeon to St. Vincent's Hospital, etc.

WITHIN the last ten years the study of ovarian diseases has passed from the region of vague conjecture into the light of exact knowledge. In no other department of medicine, excepting ophthalmology, have the advances been so rapid and the old points of departure so completely swept away. Ovariotomy, which, in 1861, was still experimental, and which ten years before that was derided by the vast mass of the profession, is in 1871 as firmly established as any surgical procedure. Nay, in cases that have been properly discriminated, it is decidedly more successful than most of the so-called major operations of surgery.

But it is, unfortunately, at this initial step—the differentiation, that is, of purely ovarian growths from those connected with the other abdominal viscera—that the great difficulty in the management of such cases occurs; and, as all treatment of necessity hinges upon diagnosis, this obscurity in complicated cases remains to the present day the great bar to the perfect success of ovarian surgery.

An immense amount of labor and ingenuity has been expended in this direction; but that almost insuperable diagnostic difficulties still occur, despite the efforts of Kiwisch, Spencer Wells, Clay, Keith, Kœberlé, Peaslee, and Atlee—names illustrious in the records of ovarian pathology—the cases detailed in this paper will render evident.

What are the leading conditions likely, in a given case, to be confounded with an ovarian cyst? Prof. Thomas, in his admirable chapter upon "Ovarian Tumors," thus enumerates them:[1]

Fecal accumulation.
Extra-uterine pregnancy.
Normal pregnancy.
Uterine fibroids.
Ascites.
Hydatids.
Distention of uterus by fluids.

In Mr. Baker Brown's work on the "Surgical Diseases of Women,"[2] they are somewhat more fully classified, as follows:

Retroversion and retroflexion of uterus.
Tumors of uterus; *a*, solid; *b*, fibro-cystic.
Ascites.
Pregnancy.
Pregnancy complicated with ovarian dropsy.
Cystic abdominal tumors.
Distended bladder.
Accumulation of gas, or of fæces, in intestines.
Enlargement or tumors of spleen, liver, and kidneys.
Recto-vaginal hernia, with displacement of ovary.
Pelvic abscess.
Retention of menstrual fluid.
Hydrometra.

The lists given by other systematic writers on the subject agree substantially with the foregoing.

From most of these conditions the differentiation of an ovarian tumor cannot be said to be difficult to a reasonably

[1] "Practical Treatise on the Diseases of Women," first edition, p. 536.
[2] Second London edition, p. 308.

careful practitioner, for either the history of its development or the physical signs obtained by a conjoined abdominal and uterine examination will nearly always suffice to decide the question.

But one of these affections presents difficulties so immeasurably greater than the rest, that its consideration alone will occupy us at present. We refer to the so-called "fibro-cystic tumor of the uterus," or the uterine fibroid that has undergone cystic degeneration, an exceedingly rare growth and essentially distinct from the ordinary fibroid in whose substance minute fluid collections have formed. The anatomical structure of these formations is minutely described by Dr. C. G. Ritchie,[1] from dissections of specimens removed by Spencer Wells. Their pathology was first studied by Cruveilhier, who delineates their appearance[2] and divides them into two classes. One of these consists of irregular cysts with undeveloped walls, due apparently to an œdematous infiltration of the fibroid, the "interlobular spaces" of which gradually dilate and finally give way from the pressure of the interstitial liquid. Anfractuous cavities are thus formed, more or less closely resembling true cysts, filled with a limpid serous liquid, generally of a light-yellow hue, but sometimes bloody. In the second variety are found perfect cysts of smooth walls, which Kœberlé considers due to the progressive dilatation of the lymphatic vessels.[3] The cavities usually communicate with each other, the larger ones being spherical in shape, while the smaller accessory cavities are flattened or shaped like irregular sinuses. Their liquid contents are yellowish, limpid, fibrinous, and spontaneously coagulable.

Mr. Paget thinks the cysts are due either to a "local softening and liquefaction of part of the tumor, with an effusion of fluid in the affected part; or to an accumulation of fluid in the interspaces of the intersecting bands; and these are the probable modes of formation of the roughly-bounded cavities that may be found in uterine tumors."[4]

[1] Wells, "Diseases of the Ovaries," vol. i., p. 259.
[2] Anat. Pathol., livraison xiii., pl. 4.
[3] Gazette Hebdom., No. 11, 1869, p. 164.
[4] Lectures on Surgical Pathology, third London edition, p. 479.

The following cases, in which fibro-cystic tumors were excised under the impression that they were ovarian cysts, will illustrate the foregoing remarks:

Case I.—E. B., aged forty-five, single, was admitted to St. Vincent's Hospital October 23, 1869, with the following history: Two and a half years ago she observed a swelling of her right foot and leg, and four months afterward noticed that her abdomen was steadily increasing in size. The latter symptom was accompanied by abdominal pain and occasional diarrhœa, which resisted all efforts at treatment.

At this time the existence of an ovarian tumor was suspected by her physician, but no special treatment was directed to it. In July, 1869, while a patient of the Northern Dispensary, she was tapped by Drs. Burrall and Whitehead, surgeons to that institution, and ten and a half quarts of a thin, chocolate-colored fluid were drawn off. In a fortnight the cyst began to refill, and continued slowly to do so until the date of her admission to the hospital. It appears on this occasion all the physicians present concurred in the opinion that the tumor was ovarian, and the patient was subsequently urged by them to have it removed, but declined.

On entering the hospital she was subjected to careful examination, and the thoracic organs were found healthy, urine non-albuminous and normal, appetite good, and bowels moderately regular. Her complexion was exsanguine and chlorotic, the expression irritable and depressed (*facies uterina*), but the pulse full and very strong.

The circumference at the umbilicus was forty-three inches; from the ensiform cartilage to the umbilicus, eleven inches; from the umbilicus to the symphysis pubis, nine and one-quarter inches, and from the umbilicus to the anterior superior spinous process, on either side, ten and three-quarter inches. The uterus was somewhat elevated, but seemed normal in its relations, admitting a sound to the apparent depth of two and one-half inches; *it was perfectly movable on the sound, without imparting the slightest motion to the abdominal tumor.*

The abdominal walls were also freely movable over the tumor in every direction. The menstrual discharge had ceased about a year previously, but, six months before her admission

to the hospital, had reappeared and recurred scantily every three weeks; no profuse flow had at any time existed.

Upon these data the diagnosis of ovarian cyst, probably unilocular and free from serious anterior adhesions, was made; a consultation confirmed this view of the case, and, after the risks and chances of extirpation were fully explained to the patient, she decided to have the tumor removed. After a few days of preparation the operation was performed, November 2, 1869, in presence of the surgical staff of the hospital, and Drs. Elliot, Peaslee, Sayre, Burrall, Weir, Kammerer, and others, of New York, and of Dr. A. N. Dougherty, of Newark, etc. Anæsthesia by chloroform, administered by Dr. Newman.

The cyst was exposed by the usual median incision, and, contrary to expectation, was extensively adherent to the peritonæum in front. These adhesions were easily separated and the contents of the cyst evacuated by Dr. Thomas's modification of Wells's trocar, the umbrella-like slide of this instrument holding the walls of the flaccid cyst with perfect security. About the same quantity of thin, brownish fluid was drawn off as on the previous occasion in July. As the cyst was emptied slight traction was made upon it, when the whole posterior and lower surface was found closely adherent to the mesentery, intestines, and pelvic organs. In fact, no pedicle at all existed.

At this juncture the operation had been carried too far to be abandoned, and no course seemed open but to detach such of the intestines as could be separated, and to cut away the cyst-walls from the uterus and bladder. In the former effort a portion of the small intestine was lacerated by my finger. The torn gut was held by an assistant, while as much more of the cyst was cut away as could be detached. The hæmorrhage from the thickened cyst-wall was arrested by persulphate of iron, silk ligatures (cut short) being applied to the larger vessels; and the wounded intestine was then closed by a fine silk continued suture. The peritoneal cavity was carefully cleaned of all blood and other fluids, and the external wound closed with silver wire, the deep stitches including the peritonæum. A small quantity of brandy and

a hypodermic injection of morphia were administered and the patient carefully removed to her bed, the operation having lasted two hours and twenty minutes.

There was marked exhaustion, but reaction slowly followed, the pulse being 64 at the conclusion of the operation, and 84 with increased volume four hours afterward.

Injections of beef-tea and brandy were given, another hypodermic injection of morphia repeated during the night; the patient slept about four hours, and in the morning was somewhat better. The same treatment was continued during the ensuing day, and no drawback occurred until evening, when the pulse began to sink and severe abdominal pain appeared for the first time. This was referred mainly to the epigastrium and the left iliac region, where lay the wounded intestine. In this condition the patient sank slowly, and died of exhaustion and incipient peritonitis thirty-one hours after the operation.

The autopsy, made seventeen hours after death, showed general peritonitis in the forming stage, most marked in the left iliac and pelvic regions, inflation of the small intestines, and about six ounces of bloody fluid in the pelvic cavity. The wounded gut was securely closed, but the wound and suture showed no covering of lymph. The pelvic organs were so moulded together that the bladder, uterus, and the uterine attachment, were removed *en masse*. A dissection of these showed that both ovaries, with the broad ligament on either side, were agglutinated to the cyst-wall, *which sprang directly from the posterior part of the fundus of the womb.* The body of the uterus was extremely hypertrophied, measuring full six inches from external os to fundus; and the internal os was so contracted as to resist the passage of the uterine sound, thereby creating the impression that it had passed completely to the fundus.

A semi-solidified cystic mass, probably a secondary fibroid undergoing cystic degeneration, was attached to the fundus of the womb posteriorly, and was included within the walls of the main cyst. A careful histological examination of these structures left no doubt that the main tumor was also a fibro-cystic outgrowth of the uterus. The other abdominal organs seemed to be healthy.

It will be remarked that, in this unfortunate case, the points upon which a diagnosis was made seemed conclusively in favor of an ovarian cystic growth. In only one respect, namely, the irregular and somewhat profuse catamenia, was suspicion of uterine disease aroused; but this was set at rest by the apparent passage of the uterine sound to the usual depth, by the mobility of the uterus on the sound, and the absence of communicated motion in the tumor. The marked *facies uterina* which the patient presented was, therefore, thought an accidental coincidence, and the irregularity of the menstrual flow attributed to the change of life.

Case II.—An unmarried female, forty-four years of age, was admitted to St. Luke's Hospital, November 11, 1869, under the care of Dr. James L. Little. The patient had begun to enlarge four years previously, but the abdominal increase caused no inconvenience until a year before her admission, when she was advised by her physician in the country to seek surgical advice. Upon her arrival she measured forty inches in circumference below the navel.

Fluctuation was distinctly perceptible in the tumor, which was carefully examined by Profs. Thomas and Peaslee, both of whom concurred in the opinion that it was a case of ovarian tumor, and an operation was accordingly advised.

For the sake of better hygienic influences the patient was transferred from St. Luke's Hospital to a private house, where the operation was performed, November 29, 1869; present Drs. Peaslee, Thomas, and Weir.

The incision was made in the usual manner, and a considerable number of adhesions were discovered anteriorly. No distinct pedicle could, however, be detected; the tumor seeming to rise from the pelvis in all directions. It was deemed proper to puncture the sac and reduce its size, in order to discover its attachment with more certainty. After the evacuation of a portion of its contents it was two-thirds of its original size, but no more light was thrown upon the case. A portion of the sac was then pulled through the wound, cut off, the clamp applied, and the wound closed by silver sutures. The patient lingered for about ten days, and died of exhaustion.

Dr. Delafield examined the specimen, and came to the conclusion that it was simply a fibrous tumor of the uterus, springing from the cervix, and undergoing cystic degeneration.[1]

Case III.—*Cystic Tumor of the Uterus mistaken for Ovarian Cyst; Gastrotomy; Partial Removal of the Uterus; Death in Thirty-six Hours.*—A single woman, aged forty-three, presented herself at the clinic of M. Demarquay,[2] on the 15th of May, 1868, with a large, smooth, abdominal tumor, of two years' growth. Menstruation had been regular until six months before the tumor appeared, when very abundant menorrhagia occurred. The swelling was first observed in the right iliac region, and after its development the menorrhagia disappeared and dysmenorrhœa took its place.

When examined by M. Demarquay the tumor was "voluminous," smooth, and remarkably mobile; it seemed to have no anterior adhesions, and presented distinct fluctuation. No uterine examination could be made, on account of the "peculiar state of the vagina." Before entering the hospital an exploratory tapping had been tried, when the cyst yielded about a half-gallon of pale-yellow liquid, a little stringy. After the tapping, the cyst, although diminished, did not entirely disappear, and the abdomen partially retained its former dimensions. From the mobility and other symptoms detailed, a presumptive diagnosis of *ovarian cyst* was made, and its extirpation was advised.

Operation June 10, 1868; anæsthesia; cyst exposed in usual manner by a median incision of fifteen centimetres. The walls of the sac were dense and resisted the trocar, which at first yielded a strong jet of blood, followed by about three pints of a dark-yellow liquid, mixed with blood. A careful examination of the tumor now showed that it had no connection with the ovaries, but was continuous with the fundus of the uterus. Ablation of the uterus was at once decided upon. The incision was enlarged, the omentum, which was bleeding, ligatured, and, after passing a provisional ligature through the body of the uterus, the mass was removed by the *écraseur*. Hæmorrhage free, but arrested by actual cautery; wound

[1] The Medical Record, January 15, 1870, p. 520.

[2] L'Union Médicale, September 22, 1868, p. 431.

united by metallic sutures, the deep sutures including the peritonæum. Death from exhaustion in thirty-six hours. The tumor consisted of one large cyst and several of smaller size, with a solid fibroid base attached to the fundus of the womb; weight nine kilogrammes including liquid; uterus much elongated.

Case IV.—*Fibro-cystic Outgrowth from Uterus supposed to be Ovarian; Removal; Death.*[1]—Patient fifty-three years of age, unmarried; no history of hereditary disease. Increase of size observed ten years previously, and always a little more marked during catamenial periods. Menses suppressed at twenty-fifth year, absent for ten years, and after reappearance very scanty and painful; no menorrhagia. Tumor discovered six months after first symptoms, increase very gradual until within the last two years. When examined the patient was much emaciated, digestion good, no œdema or varicosity about the legs; girth at umbilicus forty-five and a half inches, from umbilicus to ensiform cartilage eleven and a half inches, to pubis symphysis thirteen inches, to each ilium fourteen and a half inches. Whole abdomen filled with a tumor, obscurely fluctuating, without apparent anterior adhesions or arterial bruit. Uterus high and far back; mobility moderate, os open, cervix full and soft. Depth of cavity not stated.

Operation April 30, 1863, anæsthesia by chloroform. Incision from one inch above to eight inches below umbilicus: extensive parietal adhesions and still stronger to iliac fossæ; no pedicle found, but thick bands connected tumor with uterus. Womb transfixed below Fallopian tubes, and tumor tied and cut away. Two small fibroids removed from surface of uterus. Hæmorrhage rather free, but readily checked. Wound closed by deep and superficial sutures. Death in three hours, from apparent shock.

At autopsy, peritonæum was found thickened and in some parts almost cartilaginous. About six ounces of blood and serum effused in abdominal cavity. Uterus enlarged to twice its natural size, both ovaries enlarged, the right adherent to outer surface of tumor. The mass removed proved to be a large fibro-cystic outgrowth from the right side of fundus of

[1] Spencer Wells, "Diseases of the Ovaries," vol. i., p. 354.

uterus; weight of solid fibroid sixteen pounds, the cyst containing twenty-six pints of fluid, and four pounds of lumpy masses of decomposed fibrine.

Case V.—*Fibro-cystic uterine Tumor, supposed to be Ovarian; Gastrotomy; Cyst tapped, and found filled with Purulent Fluid; Death on Second Day.*—A married woman, aged twenty-six, of spare habit, dark complexion, a seamstress, was admitted to the Samaritan Free Hospital, under care of Dr. C. H. F. Routh.[1] The patient had had one miscarriage; no children; abdomen began to enlarge seventeen months before her admission; before this date her health was good, and menstruation regular; *no menorrhagia;* abdominal increase at first slow, but much more rapid within the last five or six months.

On examination the abdomen was found very large, the lumbar regions projecting, especially the left; umbilicus depressed. The tumor extends upward to the edges of the ribs; percussion dull; fluctuation distinct on deep pressure, but not conveyed from side to side. No souffle heard; apparently two sacs uniting near umbilical region; whole mass freely movable. Vagina not large but long, uterus high up; os reached with difficulty, and lies to right side of tumor. *Sound passes to normal depth*, but to the right side; uterus not very mobile, and *no mobility* conveyed from it to the tumor: whole pelvic cavity occupied by an indurated mass more movable on right side than on left. Diagnosis, multilocular disease of ovary, probably of left side.

Drs. Savage, Greenhalgh, and Sir William Fergusson, all examined the patient separately, and, though differing as to details, agreed in diagnosis of ovarian disease, and advised operation. No preliminary treatment; operation November 16, 1865, anæsthesia by chloroform. The usual median incision was made, adhesions slight, tumor very movable on right side, but fixed on left side; incision enlarged above umbilicus, and two-thirds of tumor extracted. The sac was tapped, and a few ounces of pus came away, followed by a larger quantity of semi-purulent liquid. Hæmorrhage from mesentery controlled by actual cautery, and incision in purulent

[1] Transactions Obstetrical Society of London, vol. viii., p. 122.

sac closed by a double ligature, and returned to the abdomen. Wound closed by metallic sutures, and patient put back to bed; much collapse and nausea, diminishing toward evening. Nausea and vomiting returned next day with delirium, and death from exhaustion occurred at end of second day after operation.

In the discussion of this case by the Obstetrical Society several points of interest were elicited: 1. As to diagnosis, all who examined it had failed to recognize that the uterus was the affected organ. 2. As to flooding, Dr. Routh quoted statistics to prove that, while menorrhagia existed in about seventy per cent. of uterine fibroids, and in only nine per cent. of cases of true ovarian disease, its occurrence was well marked in only three out of eighteen cases of fibro-cystic disease; which, therefore, follows in this respect the analogy of other *extra-uterine* growths. 3. The current opinion, that the uterine cavity is necessarily *lengthened* in these cases, is erroneous; and 4. As to independent *mobility* of the womb, it entirely depends upon the accidental occurrence of adhesions whether this exists or not.

Case VI.—The following case has been verbally reported to me by Prof. James P. White, M. D., of Buffalo:

An unmarried lady, about forty-five years of age, was sent from the country to Dr. White in the month of September, 1864. She had a large abdominal tumor, which was circumscribed, fluctuating, distinctly movable, and, upon a very thorough examination by all the recognized methods, presented the typical symptoms of an ovarian cyst. The patient had never been tapped, and readily consented to have the tumor removed, which was attempted in the presence of Dr. Minor and a number of other well-known physicians of Buffalo.

Upon opening the abdomen, no serious adhesions were found, and the cyst was tapped; but, on tracing the pedicle of the tumor, it was found to spring from the uterus, being intimately attached to the fundus and left side of the womb. The connections with the uterus were severed and secured with difficulty; the uterus itself was not removed. The abdominal wound was closed with interrupted metallic sutures, the deeper stitches including the peritonæum.

The patient died of apparent exhaustion, a few days after the operation, and at the autopsy the ovaries were found intact; no secondary hæmorrhage had occurred.

Case VII.—A married woman, aged forty-three, consulted Mr. Lane,[1] of London, in 1844, for supposed ovarian disease, which had existed eight or nine years. The cyst had spontaneously disappeared five successive times, at intervals of about twelve to eighteen months. For the last two years, however, the cyst had not given way, and the patient was tapped three times during this period. The patient had never borne children, but her general health was good. Mr. Lane operated for ovariotomy, February 15, 1844, opening the abdomen to the extent of seven inches; anæsthetics not used. A large cyst was discovered arising from the fundus of the uterus, and in no way connected with the ovaries. Temporary ligatures were applied to the pedicle, after severing which six permanent ligatures were applied, each including about an inch of the cut edge of the portion of the cyst left attached to the uterus. The pedicle was then returned to the abdominal cavity, and the wound was closed by seven interrupted sutures, *not* including the peritonæum. Smart fever occurred for two or three days, but the patient recovered in three weeks, and married again three years after the operation. She died a year and a half after this date, of disease of the bladder, which seems to have had no connection with her former maladies.

Case VIII.—*Fibro-cystic Tumor of the Uterus; Ascites; Gastrotomy; Death.*—In June, 1864, Mr. Spencer Wells[2] was consulted upon a case of supposed ovarian disease in Dublin. The patient was single, aged forty-five, extremely emaciated, but in good spirits. Ten years previously, two apparently solid tumors had been detected in her abdomen, one above the umbilicus, the other in the right iliac fossa. They were then each about the size of a goose-egg, and the abdomen had increased so slowly that no alteration of dress had been necessary until a year before Mr. Wells saw her; during the past two months increase had been very rapid. When examined,

[1] Clay's translation of "Kiwisch on Diseases of the Ovaries," London, 1859. Appendix, p. 166.

[2] "Diseases of the Ovaries," vol. i., p 356.

the abdomen was enormously distended, measuring fifty-six inches at the umbilicus, and was more decidedly prominent on the right side. Above the umbilicus fluctuation was distinct, but deep pressure displaced the fluid and revealed a semi-solid tumor underneath; below the umbilicus fluctuation was indistinct, and the tumor seemed to be adherent. Uterus high but central, admitting sound to depth of three and a half inches. Menstruation had been irregular for the last six months, but had never been profuse—patient never tapped.

As the case was urgent, it was decided in consultation to tap above the umbilicus, and, if the tumor proved to be firmly adherent, to do no more; but, if the tumor was not attached, to remove it. Chloroform was accordingly given, and the abdomen tapped above umbilicus, when thirty pints of clear, rather viscid, fluid were removed. No adhesions were discovered within reach of the trocar, and an incision of six inches was therefore made below the umbilicus, exposing what seemed to be "two ovarian cysts separated by a deep fissure." The left was tapped, emptied of ten or twelve pints of bloody serum, and then withdrawn, when two attachments were discovered —one to the opposite tumor, and the other to the uterus. These were transfixed, tied with strong silk, and the tumor cut away, when it became a question what should be done with the tumor on the right side. Its great size, solidity, and evident close connection with the omentum and colon, seemed decisive arguments against its removal. The wound was accordingly closed, and the patient placed in bed; she was extremely feeble, and, although brandy was freely administered, she never rallied or regained consciousness, but died three hours after commencement of operation.

The tumor consisted of fibrous tissue, arranged here and there in concentric lamellæ, and split up by little cavities, filled with serum. It was directly connected with the fundus uteri by a fibrous column, five inches long and three inches deep. This constituted the pedicle of the tumor which was removed. The other tumor (left *in situ*) was an enormous mass eighteen inches long, sixteen inches broad, and near the centre fully seven inches thick. The surface was nodulated by rounded projections of all sizes, some evidently containing fluid, and others hard and of apparently fibrous structure.

In discussing the difficulties of diagnosis of fibro-cystic from ovarian tumors, as illustrated by this case, Mr. Wells says: "Even after an exploratory incision, I know of nothing but a rather darker—less pearly blue—aspect of the tumor which would put the surgeon on his guard. In any doubtful case it would be well to tap the largest cyst and examine the fluid. In both my cases this was peculiar—not the viscid, mucoid fluid of multilocular ovarian cysts, but a thin serum with five, ten, or fifteen per cent. of blood intimately mixed with it, and not separating until after standing for some hours. In this way I have satisfied myself in at least four cases that tumors, which others considered to be ovarian, were really fibro-cystic uterine growths. If the operation has been commenced, and the dark aspect of the tumor is observed, it would certainly be advisable not to do more than tap one or more of the largest cysts before examining attentively the connection between the uterus and the tumor. If these should prove to be very intimate, it will be the unpleasant duty of the surgeon to desist from any attempt to do more, and to close the wound as soon as possible."

Case IX.—In August, 1865, an unmarried lady, aged forty-seven, consulted Dr. H. R. Storer,[1] of Boston, for an abdominal tumor, which had appeared five years previously. This had steadily enlarged until the date mentioned, when it had caused much dyspnœa and difficulty in walking; menstruation had been scanty but regular, with little or no dysmenorrhœa and no tendency to menorrhagia at any time. A careful examination showed that the whole abdomen was filled by a resisting mass, affording localized fluctuation at many points evident enough to leave no doubt of the existence of fluid; the outline was regular and uniform, save in the right iliac region, where there "was felt a double prominence, more marked upon deep pressure, the two portions distinct from each other." No evidence of the uterine or ovarian origin of the tumor could be elicited by rectal or vaginal examination, which was simply negative; the uterus seemed slightly elongated, and was scarcely movable at all upon the sound. No diagnosis was therefore positively made, although the weight of the evidence

[1] American Journal of Medical Sciences, January, 1866, p. 114.

indicated a multilocular ovarian cyst, with enlarged but indurated base.

As Dr. Storer was convinced that the tumor would, unremoved, eventually destroy the patient, he decided to remove it, which was done on September 23, 1865, the patient being thoroughly anæsthetized. Upon opening the abdomen, the tumor was found of a dark, purplish hue, with extensive anterior and lateral adhesions. When these were broken through, the abdominal mass was found continuous, with another of large size and irregular outline completely filling the pelvic cavity; for convenience of manipulation and removal, these were separated with the *écraseur*, when it was discovered that the pelvic tumor was directly connected with the uterus. A clamp was now passed around the broadened cervix, to protect the vaginal septum, and the entire pelvic mass, uterus and all, removed with the *écraseur* just above the clamp. Hæmorrhage was rather copious, but wire ligatures were placed upon the open vessels; and, after other expedients were tried without effect, the extensive surfaces of adhesion were exposed for three hours to give time for the oozing to cease, the patient being all this time kept under the anæsthetic. The incision was closed by the insertion of five wire sutures, including the peritonæum; no dressing of any kind was used, the abdomen being simply protected from the bedclothes by a wooden frame. Under expectant treatment and rigid diet, the patient recovered without a bad symptom, and returned home on the thirty-seventh day after the operation.

A careful dissection of the tumor, which weighed thirty-seven pounds, including thirteen pints of fluid, showed that the uterus (excised through the cervix) was elongated and distorted by numerous small fibroids, from two or three lines to four inches in diameter, while the large fluctuating mass, which sprang from the side of these, consisted of two principal tumors, fibrous, quite vascular externally, and containing both cystic formations and serous infiltration. The ovaries and Fallopian tubes were distinctly separate from the diseased mass, the right ovary containing a recent corpus luteum, and several minute cysts. Dr. Storer, rightly, we think, deems this a true case of fibro-cystic disease of the uterus, although

some of the experts who examined the mass thought it originated in the broad ligament.

Case X.—A case, in many respects analogous to this, was reported to the New York Pathological Society in 1865, by Prof. H. B. Sands,[1] who excised the uterus and uterine appendages on account of a tumor which he suspected to be of uterine origin, although "certain facts in the patient's history and in her physical condition pointed strongly to the existence of ovarian disease."

The enlargement had begun seven years before, in the left iliac fossa, the growth being at first gradual, but in a year's time very rapid. Menstruation had sometimes been suspended, but no menorrhagia of any kind had existed; the patient was single, forty-five years old, and of healthy parentage. Examination of the abdomen, which was rendered more difficult by ascites and a large umbilical hernia, revealed the outlines of two or three swellings, with obscure fluctuation. The uterus was very high, to the left of median line, and admitted the sound to the depth of four inches. It was immovable on the sound, except in conjunction with the tumor, which was very mobile; and this conjoined mobility of uterus and tumor was the feature that led Dr. Sands to suspect it was of uterine origin. A formal consultation determined the propriety of an operation, which was performed June 12, 1865. The abdominal cavity was reached with ease, and, when the tumor was brought into view, its nature was still so uncertain that it was tapped, but no fluid was obtained. No serious adhesions existed above, but in the pelvic cavity they were extensive and formidable. The tumor being found inseparable from the uterus, Dr. Sands, whose brilliancy as an operator is well known, determined, with the concurrence of those present, to remove the whole *en masse*, which was accordingly done above the line of implantation of the vagina into the cervix uteri. Alarming hæmorrhage ensued, chiefly from a rent in the common iliac vein, but the bleeding points were secured as rapidly as possible. The operation had lasted for an hour and a half, and, in spite of active stimulation, the patient sank and died a few minutes after its completion. Death was attributed

[1] New York Medical Journal, December, 1865, p. 188.

to exhaustion from hæmorrhage, which Dr. Storer[1] thinks was due to the use of the knife instead of the *écraseur*. The mass removed, which weighed about twenty pounds, was composed of the uterus and three large outgrowing fibroids, which were in many parts so soft as to resemble œdematous connective tissue, and the largest tumor containing a number of cysts filled with serum. The womb was greatly hypertrophied, measuring nine inches in its longest diameter, and admitting the sound through seven inches of a somewhat tortuous route.

Case XI.—In December, 1847, a single woman, aged twenty-seven, was admitted to the Massachusetts General Hospital, under care of Dr. Samuel Parkman[2] for the relief of an abdominal tumor, which was first noticed a year before this date. General health good; no menorrhagia or dysmenorrhœa; abdomen about as large as at seventh month of pregnancy, the tumor occupying hypogastric, right and left iliac, umbilical, and left lumbar regions. The mass was well defined, with rounded edges, very movable, not distinctly fluctuating, but "giving the sensation of being composed chiefly of an elastic texture containing cysts scattered through its substance." Vaginal and uterine examination negative. The absence of distinct fluctuation was thought the only lacking symptom of its ovarian character, and the diagnosis of probable (but not certain) multilocular ovarian cyst was thereupon given. The patient had previously been tapped by another surgeon, who obtained no fluid. As the woman urgently demanded an operation, gastrotomy was performed by Dr. Parkman, January 8, 1848; anæsthesia by chloroform. When the tumor was exposed its nature was still doubtful, and it was tapped in two places, without effect; it was then lifted gently out of the pelvis, when its uterine nature was first detected. No serious adhesions existed, nor had the tumor any pedicle, but the womb "appeared to expand itself and grow gradually into the enormous mass." A strong double ligature was passed through the body of the uterus, which was firmly ligated, and the whole mass above that point removed by the knife. No bleeding occurred, and the pelvis was therefore

[1] *Loc. cit.*, pp. 123, 127.

[2] American Journal of Medical Sciences, April, 1848, p. 371, *et seq.*

sponged clean, and the abdominal wound closed by sutures and adhesive strips. The patient rallied quickly, and did well until evening, when she suddenly began to sink, and died of secondary hæmorrhage from the uterine incision twelve hours after the operation. A careful examination of the tumor, and of the parts left in the pelvis, showed that it sprang from the left side of the uterine fundus, involving the left Fallopian tube, and immediately expanded into an ovoid mass, with triple lobes, between eight and nine pounds in weight. It presented none of the hard, grisly character of true fibrous tumor, but was soft and compressible like sponge, "presenting large meshes, containing considerable quantities of clear, serous fluid, which leaked from its incised surfaces." All the physicians who saw the case concurred in Dr. Parkman's diagnosis.

Case XII.—In 1855, Dr. E. R. Peaslee reported[1] the case of a widow aged thirty-five, who consulted him in August, 1853, for a pelvic and abdominal tumor, which had appeared twenty-one months previously, after a tedious and difficult confinement. It extended nearly to the umbilicus, was firm and smooth, freely movable, not sensitive, but productive of much distress by pressure on the bladder and rectum. When examined *per rectum et vaginam*, it was only perceptible on the right side, and involved the right ovarian region—uterus very movable in all directions except to the left, and quite independently of tumor; sound passed to depth of three and one-half inches. Fluctuation not marked, growth steady and rapid; patient pale and emaciated. The tumor was judged by Dr. Peaslee to have "commenced in the right ovary and not yet adherent to any other part or organ, except to the uterus, by its natural but enlarged attachments." Its removal was decided upon if the patient's general health could be improved; and, in six weeks' time, this was so much better that gastrotomy was performed, September 21, 1853. At this time another careful examination was made of the tumor, which had manifestly increased in size, and now gave an evident, though not very distinct, feeling of fluctuation. This fact served to confirm the previous diagnosis.

[1] American Journal of Medical Sciences, April, 1855, p. 394, *et seq.*

The abdomen was opened, and the tumor reached in the usual manner, the patient being thoroughly etherized. The tumor was smooth, of a pale, livid color, free and unattached above, and so distinctly fluctuating to the touch that it was at once tapped; no fluid being obtained, the abdominal wound was enlarged, and the tumor found to be continuous with the fundus of the uterus. No other serious adhesions existing, and the uterus being elongated and slender at its lower part, it was at once decided to remove the whole mass; which was done by excision with the knife, after securing the uterus as low as possible in the pelvis with a strong double ligature. Only one artery had to be secured in the uterine stump, the entire hæmorrhage not exceeding six ounces. The left ovary, being diseased (but not connected with the tumor), was excised with the uterus; the right was healthy, and left *in situ*, and the abdominal wound was closed with harelip-needles, sutures, and adhesive strips. Complete reaction followed; but, on the next day, a hernial protrusion of the bowel occurred through the wound, and, the gut becoming strangulated, death ensued on the fourth day after the operation. No secondary hæmorrhage occurred. The tumor proved, upon section, to be a large outgrowing uterine fibroid springing from the right of the fundus, and already softening and degenerating in its central portions; to the latter condition, and to the dilatation of the uterine sinuses in the vicinity of the tumor, was due the deceptive feeling of fluctuation. The body of the uterus was also elongated, the cavity when straightened admitting a sound to the depth of five and a half inches; but two inches below this point the cavity of the uterus was flexed sharply to the left, which rendered the farther passage of the sound impossible before death.

Case XIII.—I am indebted to the kindness of Prof. Peaslee for the following details of a second case[1] upon which he operated in February, 1868:

The patient had detected a pelvic tumor several years previously; its growth was very slow, over three years from

[1] American Journal of Obstetrics, vol. iii., No. 2, where the case is incidentally alluded to in article on "Injections of the Peritoneal Cavity after Ovariotomy."

its discovery before tapping became necessary. The fluid then obtained was of a dark-brown (chocolate) color, like what is occasionally (though rarely) obtained from an ovarian polycyst. At the date of the operation abdominal fluctuation was distinct; the uterus was of normal depth and in the central position, and was freely movable in all directions independently of the tumor. All the other means of exploration pointed to the diagnosis of ovarian cyst, which was the diagnosis adopted; although some doubt of its accuracy lingered in Dr. Peaslee's mind, from the slow rate of growth, and the nature of the fluid obtained at the previous tapping. Gastrotomy was performed, and it was only after the fluid was again drawn off that the tumor was found to be of uterine origin. Numerous and extensive adhesions existed, but the mass fortunately had a distinct pedicle three-fourths of an inch broad and one-fourth of an inch long, which grew from the middle of the top of the *fundus uteri*. This was securely tied, the ligatures being cut short and left in the pelvic cavity, and the large fibro-cystic growth excised above the line of ligation. The peritoneal cavity was thoroughly sponged out; and a tent of moistened and firmly-twisted linen, projecting into the abdomen for a half inch, was left between the lower two sutures in the abdominal wound, for fear of secondary hæmorrhage. The patient entirely recovered, and two and a half years after the operation remained in perfect health.

Case XIV.—In Dr. Routh's *brochure* upon uterine tumors,[1] and in "Hewitt's Treatise on the Diseases of Women" (London edition, 1863, p. 403), is narrated the following case, occurring in the practice of Mr. F. D. Fletcher, of Liverpool:

A widow, aged forty, who had borne five children, and had three miscarriages, had observed an abdominal tumor thirteen months before applying for treatment. Mr. Fletcher thought the growth ovarian, and decided to remove it, which was done May 14, 1862. On opening the abdomen, the mass was found adherent to the omentum and to the abdominal wall. Numerous cysts were punctured, and the tumor was then found to spring from the lower part of the womb to the

[1] "On Some Points connected with the Diagnosis, Pathology, and Treatment of Fibrous Tumors of the Womb." London, 1864. Tab. ii., Case 13.

left of the median line. The pedicle was broad and well developed, and this was divided by the *écraseur*, after which two short ligatures were applied. Recovery was complete; and, when, a few months after the operation, the patient reapplied for treatment on account of an eczema, she was fat and quite well.

Case XV.—A married woman, forty-two years old, consulted Mr. Hakes[1] for an abdominal swelling which had begun fifteen months previously. She had two children, the youngest fifteen years of age. A careful examination of the tumor led to the conviction that it was an ovarian cyst, and it was twice tapped, but soon refilled. Its removal was decided on, and on January 29, 1863, gastrotomy was performed for this purpose. The tumor was found adherent to the omentum and intestines, but had a slender pedicle, which grew from the uterine fundus. It consisted mainly of numerous small cysts, two or three of which were filled with old clots of blood. The pedicle was secured by two distinct ligatures, reënforced by another strong ligature around the whole mass. The tumor was then cut away, but the patient gradually sank, and died thirty-three hours after the operation. Both ovaries were diseased, but were not connected with the tumor.

Case XVI.—A single woman, forty-five years old, consulted Mr. Baker Brown,[2] in 1860, for an abdominal tumor which had begun to develop in the right iliac fossa eight years previously. At first its growth was almost imperceptible, but during the last six months the increase was very rapid. A very thorough examination convinced Mr. Brown that the tumor was ovarian, and, under that belief, gastrotomy was performed, May 15, 1860. Very extensive and formidable adhesions were found; and, while separating some of these, one of the compartments of the cyst was ruptured and a quantity of liquid poured into the abdominal cavity. The mass was now discovered to be a fibro-cystic tumor of the uterus, neither ovary being involved in it. Its removal was deemed injudicious, and a part of the cyst was excised and the

[1] British Medical Journal, February 28, 1863.
Routh, *loc. cit.*, Tab. iii., Case 26.

wound closed. The patient progressed pretty well for ten days, when a little fluctuation was discovered in the abdomen. This was followed by an attack of erysipelas, extending to the right leg and gradually becoming phlegmonous. Death ensued on the twenty-fourth day.

Case XVII.—In 1855, Dr. W. L. Atlee[1] reported the case of an unmarried woman, forty-three years of age, who had applied to him six years previously for the relief of an abdominal tumor which he considered ovarian. For this purpose he operated, October 13, 1849: "Incision from one inch above the umbilicus to pubis; tumor uterine with large cystiform bodies incorporated with it. Non-adherent; not removed. Anæsthesia; recovery. Died between three and four years afterward, from progress of disease. Weight of the mass removed after death, fifty pounds."

Case XVIII.—A married woman, thirty-six years old, consulted Mr. I. B. Brown, in 1862, for a tumor which was first observed six years before. She had been tapped once only, when nearly two quarts of a brownish liquid were drawn off, and the tumor was thought to be a multilocular cyst of the ovary. She was subjected to operation (gastrotomy), December 11, 1862, when the following condition was revealed: Ascites, tumor not ovarian, but a fibro-cyst of the uterus with extensive adhesions; two endo-cysts were tapped, and about a quart of muddy, yellowish fluid drained off; tumor not removed, as that would have involved ablation of the womb.

Six days afterward a violent attack of coughing reopened the wound, through which the serous fluid drained for several days. The tumor increased rapidly in bulk, vomiting and pyæmic symptoms ensued, the wound gaped, and death followed on the twenty-sixth day.[2]

Judged by the ordinary standards of diagnosis, the foregoing cases certainly exhibit no very hopeful prospect of avoiding similar errors in the future. For not one of these was undertaken hastily, or without the most careful examina-

[1] American Journal of Medical Sciences, April, 1855, p. 388, Case 6.

[2] Transactions of the Pathological Society of London, vol. xiv., p. 199. Case also quoted by Kœberlé, Gazette Hebdomadaire, March 12, 1869, p. 164.

tion, and yet in none but those of Peaslee, Storer, and Sands, did the operator entertain even a doubt of the correctness of his opinion until the operation had reached a point from which retreat was impossible. In Case XII. the history of development and the symptoms were antagonistic; and Dr. Peaslee thought the growth might *possibly* be uterine, but on the whole thought it ovarian. Case IX. was so obscure that Dr. Storer only adopted the diagnosis of ovarian multilocular cyst by exclusion, although not entirely satisfied of its nature. In Case X., Dr. Sands suspected that the tumor *might* be of uterine origin, although certain facts in the history and physical examination pointed to the existence of ovarian disease, which latter was the diagnosis of others [1] who had the case in charge. Nor is this difficulty lessened by an appeal to systematic writers on the subject, who unanimously state that no accurate diagnosis is possible between the two affections.

Thus, Graily Hewitt ("Diseases of Women," ed. 1863, p. 403) says: "These cases" (of fibro-cysts of the uterus) "are very rare, and it seems almost impossible to say how they are to be distinguished from cases of ovarian tumors during life." And again, p. 575: "This disease has never, so far as I am aware, been diagnosticated during life, but it has on more than one occasion" (we have instanced eighteen such, without by any means exhausting the list) "been mistaken for an ovarian tumor." Mr. Baker Brown states [2] that "the diagnosis between these very rare tumors and encysted ovarian disease must be more difficult even than in the case of solid tumors. Indeed, I know of no distinguishing marks between the two."

Mr. Spencer Wells's opinion, already quoted, is still more explicit, for he says: "Even after an exploratory incision I know of nothing but a rather darker—less pearly blue—aspect of the tumor, which would put the surgeon on his guard." [3]

Dr. Peaslee, who is justly celebrated as a diagnostician in ovarian pathology, informed the writer, in reference to the difficulties surrounding Case XIII. of this series, that, up to the

[1] Dr. Emmet, however, whom the patient had previously consulted, informs me that he was satisfied of the fibro-cystic nature of the tumor.

[2] "Surgical Diseases of Women," second edition, p. 310.

[3] "Diseases of the Ovaries," vol. i., p. 362.

present time, he "knows of no means of positively deciding in such a case" between an ovarian cyst and a fibro-cystic tumor of the womb.

Prof. Kœberlé, of Strasbourg, has, however, published in the Gazette Hebdomadaire[1] a paper characterized by great ingenuity and research, in which he claims that the diagnosis of fibro-cystic growths can with certainty be established by attention to the following points:

1. The discolored hue and dejected expression of the face, or the so-called *facies uterina*, of the patient.

2. The variable consistence of the growth, as shown by abdominal palpation.

3. The results of tapping. If the trocar touch a fibrous spot in the tumor-wall, blood will flow; even when the cyst is reached, the fluid never presents the clear, viscid character of ovarian cystic fluid, but is either yellowish, thin, serous, and rich in lymph or cholesterin, or it is brownish, muddy, sero-purulent, or bloody.

4. The indurated (or nodulated) feeling of the tumor after tapping.

5. The uterine connections of the growth, as made out by careful vaginal and uterine examination.

By these means M. Kœberlé was able to diagnosticate with precision the following interesting case, which is reported in the same connection:

Case XIX. — An unmarried lady of Wiesbaden, aged thirty-four, consulted him in 1868 for an abdominal tumor, which was first observed two years previously; although three years before that time her health had become impaired by excessive constipation and other irregularities which seemed due to pelvic obstruction.

During the last year the abdomen had rapidly enlarged, and, at the date of consultation, was quite filled by a rounded tumor, fluctuating at some points, solid at others, and giving the general impression of a multilocular ovarian cyst. The pelvic cavity was also filled by the mass which seemed continuous with the posterior part of the *cervix uteri*, which was

[1] March 12, 1869, p. 163.

pushed forward, and to the left. The hymen was so tight and dense as to preclude the use of the sound.

Two of the largest compartments of the tumor were tapped, and yielded two and a half quarts of a serous fluid, containing large quantities of cholesterin. This fact, with the irregular outline of the tumor, its close connection with the *cervix uteri*, and the marked *facies uterina* of the patient, convinced him that it was a fibro-cyst of the uterus, in spite of its rapid development and multilocular character, which indicated an ovarian origin.

The patient, who had undergone a variety of useless treatment, imperatively demanded an operation, from which M. Kœberlé tried in vain to dissuade her; but, after fully explaining its risks and the improbability of a successful termination, he consented to attempt gastrotomy. Operation, August 31, 1868; anæsthesia by chloroform. Short median incision, afterward enlarged. When exposed, the tumor was lifted with great difficulty from the abdominal cavity; and, after numerous tappings, which obtained only three and a half quarts of fluid, it was found to spring directly from the posterior uterine wall, without involving the neck or fundus. Both ovaries were healthy.

The pelvic portion of the tumor, which was comparatively very small, formed a kind of pedicle for the rest. The punctures made by the trocar bled so freely that an iron-wire ligature was thrown around the pedicle as close to the womb as possible, and the abdominal tumor excised. The pelvic portion was separated with extreme difficulty, being intimately adherent to the recto-vaginal *cul-de-sac*, and the posterior vaginal wall; it was gradually enucleated, without injury to the pelvic vessels, and the womb left intact. Hæmorrhage very copious; arrested by metallic ligatures cut short, the actual cautery, and perchloride of iron.

The operation lasted two and a half hours, and the patient was exceedingly cold and feeble; reaction was gradual but complete, and in twenty-nine days she was walking about, and soon returned home.

A careful histological examination of the tumor showed conclusively its uterine origin and its fibro-cystic structure.

It is not to be supposed that every case of fibro-cyst of the uterus will exhibit all the distinctive marks noted by Kœberlé, and a glance at the cases already detailed will show the need of bearing other points equally in mind.

For instance, as to time or progress of development—although generally slower than ovarian growths, this will depend upon whether the original fibroid is interstitial or merely subperitoneal. In the latter case, its cystic degeneration and growth may be quite as rapid as ovarian disease.

Again, menorrhagia, as a forerunner or coincident symptom, is seldom found to exist in fibro-cystic disease, because the neoplasm is extra-uterine from the beginning, at least only slightly invading the uterine wall, whereas the true fibroid is more deeply seated. The disregard of this fact, and the fictitious value attached to the absence of flooding, have powerfully contributed to errors in diagnosis.

Thirdly, independent mobility of the womb really indicates nothing but the absence of pelvic adhesions; for, if the fibro-cyst have passed into its second stage of development, and undergone extensive cystic degeneration, it will scarcely ever be affected by uterine motion—especially if a moderately small pedicle exist; and lastly, the uterine hypertrophy or increased length of the cavity, upon which much reliance has been placed, is shown to be of very doubtful value by Dr. Routh, who has found the greatest amount of elongation in certain ovarian cases.[1]

M. Kœberlé is of opinion that fibro-cystic disease never appears under thirty years of age, although, among the preceding cases, two exceptions to this rule are found. With these general facts in mind, the differential diagnosis between uterine fibro-cysts and ovarian cystic tumors may be pretty confidently stated as follows:

IN OVARIAN CYSTS.	IN FIBRO-CYSTS OF THE UTERUS.
1. Disease may occur at any period, even before puberty.	1. Scarcely ever occurs under thirty —generally from forty to fifty.
2. Development rapid—usually under two years.	2. Development slow; generally over two years.

[1] Transactions Obstet. Society of London, vol. viii., pp. 128, *et seq.*

IN OVARIAN CYSTS.	IN FIBRO-CYSTS OF THE UTERUS.
3. Aspect of face unaltered, if general health be fair.	3. "Facies uterina" generally marked; expression anxious and dejected.
4. Fluctuation equable over whole surface of tumor.	4. Fluctuation confined to certain regions—generally to upper portion, while lower is hard and dull.
5. Vaginal examination shows little displacement of uterus—mass smooth and distinct from uterus.	5. Vaginal examination shows uterus high up or displaced. Mass either not detected, or continuous with uterus.
6. Mobility of uterus independent of tumor from beginning—pelvic adhesions rare.	6. Independent mobility of womb confined to last stage of disease. Pelvic adhesions common.
7. Tapping causes complete collapse of unilocular cysts—in polycystic tumors, it reveals the endocysts.	7. Tapping causes only partial collapse, leaving base of tumor firm and indurated.
8. Fluid clear, straw-colored, serous; or viscid, clear, mucoid, albuminous.	8. Fluid either brownish, bloody, sero-purulent, muddy; or thin, yellowish, containing shreds of lymph or cholesterin.
9. When exposed by gastrotomy, sac is pearly-blue, or white and glistening; rarely vascular.	9. Exposed sac dark, vascular, thick, and frequently fasciculated with fibrous bands.

The following Chronological Table, compiled upon the basis of the valuable Statistical Tables of Mr. John Clay, of Birmingham, exhibits at a glance the salient points of the preceding cases, which, for purposes of analysis, have been reported in greater detail.

No. of Case.	Date of operation.	Name of operator.	Age and social state of patient.	Duration and progress of the disease.	Anæsthetics used or not.	Proceedings of the operation.	Result.		Source of information.
							Recovery.	Fatal, and cause of death.	
1	Feb. 14, 1844.	Mr. Lane, London.	43, Married —no child'n.	Disease had existed 8 or 9 years; cyst disappeared spontaneously five times; tapped three times; general health good.	Not used.	Abdominal incision of 7 inches; pedicle secured by temporary ligatures, then severed and secured by 6 permanent ligatures.	Patient recovered in 3 weeks; died 4½ years afterward.		Clay's translation of Kiwisch's Lectures, Appendix, p. 166.
2	Jan. 8, 1848.	Dr. Sam'l Parkman, Boston.	27, Single.	Tumor noticed 1 year before; general health good; abdomen about as large as at seventh month of pregnancy; no menorrhagia or dysmenorrhœa.	Chloroform given.	Usual incision in median line; no serious adhesions, and no pedicle; uterus transfixed with ligatures, and excised with knife.		Death from secondary hæmorrhage, in 12 hours.	Amer. Journal Med. Sci., April, 1848, p. 371.
3	Oct. 13, 849.	Dr. W. L. Atlee, Philadel.	43, Single.	Not stated.	"Anæsthesia."	Incision from 1 inch above umbilicus to pubis; tumor non-adherent; not removed, as it was continuous with body of uterus.	Recovery; died between 3 and 4 years after, from progress of the disease.		Amer. Journal Med. Sci., April, 1855, p. 388.
	Sept. 21, 1853.	Prof. E. R. Peaslee, N. York.	35, Widow, multipara.	Tumor appeared 21 months before—following a tedious and difficult labor; growth slow; health much depressed and exhausted; mobility of uterus, independent of tumor; fluctuation.	Sulphuric ether given.	Gastrotomy by usual incision; tumor continuous with uterus, which was excised above a double ligature passed through the cervix; left ovary also removed.		Death on 4th day from strangulation of bowel, which protruded through the abdominal wound.	Amer. Journal Med. Sci., April, 1855, p. 394, *et seq.*

5	May 15, 1860.	Mr. I. B. Brown, London.	45, Single.	Swelling first noticed in right iliac fossa, 8 years previously; growth slow at first; very rapid within last six months; health much impaired.	Not stated.	Gastrotomy as usual; adhesions numerous and formidable; cyst ruptured while freeing adhesions; part of cyst-wall cut away, but the rest not removed.		Erysipelas on 10th day involving abdomen and right lower extremity; death on 24th day.	Routh, "Points connect. with Diagnosis etc. of Tumors of Womb," Lon. 1864, tab. iii., case 26.
6	May 14, 1862.	Mr. F. D. Fletcher, Liv'rpool.	40, Widow, multipara.	Abdominal tumor noticed 13 months before; patient had had five children and three miscarriages; health moderately good.	Not stated.	Gastrotomy by usual incision; strong adhesions to abdominal wall and omentum; cyst sprang from left side of uterus, low down, by pedicle, which was tied, and divided by *écraseur*.	Recovery complete.		Routh, *loc. cit.*, tab. ii., case 13; also Graily Hewitt, p. 403.
7	Dec. 11, 1862.	Mr. I. B. Brown, London.	36, Married	Tumor first observed 6 years ago; increase gradual; fluctuation distinct; tapped once, yielding peculiar brownish fluid; health failing.	Anæsthesia by chloroform.	Gastrotomy as usual; adhesion extensive; two large endocysts tapped, but tumor, which was continuous with uterus (without pedicle), not removed.		Abdominal wound reopened by violent coughing and retching; gradual development of pyæmia, and death on 26th day.	Trans. of Path. Soc. of Lond. v. xiv., p. 199; also Kœberlé, Gaz. Hebdom., March 12, 1869, p. 164.
8	Jan. 29, 1863.	Mr. Hakes, London?	42, Married	Abdominal swelling observed 15 months previously; two children; growth of tumor gradual; twice tapped, cyst refilling rapidly; health fair.	Chloroform.	Gastrotomy by customary incision; adhesions to intestines and omentum; tumor arose from fundus uteri by a slender pedicle; no connection with ovaries; pedicle tied with double ligatures and then excised; hæmorrhage considerable.		Death from exhaustion, 33 hours after the operation.	Brit. Med. Jour., Feb. 28, 1863, cited by Kœberlé, Gazette Hebdom., March 12, 1869, p. 165.
9	April 30, 1863.	Mr. T. Spencer Wells, London.	53, Unmarried.	Tumor discovered 9½ years before; increase very gradual; patient emaciated, but general health fair; dysmenorrhœa, but no menorrhagia.	Anæsthesia by chloroform.	Incision 9 inches long; extensive adhesion, and no pedicle; womb transfixed below Fallopian tubes, and tumor tied and cut away; hæmorrhage rather free.		Death in 3 hours from apparent shock of operation.	Spencer Wells's "Diseases of the Ovaries," vol. i., p. 354.
10	June 20, 1864.	Mr. Spencer Wells, London.	45, Single.	Two solid tumors found 10 years previously; no decided enlargement until within 1 year; patient emaciated; never tapped; menstruation irregular—never profuse.	Anæsthesia by chloroform.	Tapping followed by gastrotomy; two large cysts found, both springing from uterus; only the smaller was cut away—the other being too extensively adherent to permit removal.		Death from shock (?), never recovered consciousness.	"Diseases of the Ovaries," vol. i., p. 356.
11	Sept., 1864.	Prof. J. P. White, Buffalo.	About 45, Single.	Tumor large, movable, fluctuating, and presenting all typical signs of ovarian tumor; never tapped; health fair; menstruation not noted.	Not stated.	Gastrotomy as usual; no serious adhesions, and ovaries found intact; cyst tapped and cut away from fundus of womb, with which it was continuous.		Death a few days after operation from apparent exhaustion; no secondary hæmorrhage.	Verbal statement of operator to reporter.

Chronological Table. Concluded.

No. of Case.	Date of operation.	Name of operator.	Age and social state of patient.	Duration and progress of the disease.	Anæsthetics used or not.	Proceedings of the operation.	Result.		Source of information.
							Recovery.	Fatal, and cause of death.	
12	Sept. 23, 1865.	Prof. H. R. Storer, Boston.	47, Single.	Tumor appeared 5 years before; enlargement steady; much dyspnœa and difficulty in walking; menstruation scanty but regular; tumor filled whole abdomen; localized fluctuation.	Sulphuric ether given.	Gastrotomy by customary incision; numerous adhesions; immense abdominal and pelvic tumor, continuous with uterus; removed with *écraseur* above a clamp which was secured around cervix; hæmorrhage rather copious but not alarming.	Recovery without a bad symptom; returned home on 37th day after operation.		Amer. Journal Med. Sci., January, 1866, p. 114.
13	October 1865.	Prof. H. B. Sands, N. York.	45, Single.	Tumor appeared 7 years before in left iliac fossa; growth slow at first; menstruation irregular, but no menorrhagia; distention very great, umbilical hernia complicating tumor.	Anæsthesia by sulphuric ether.	Gastrotomy by short median incision, afterward enlarged; adhesions trifling above, but large and firm in pelvis; tapped; no fluid; mass cut away with great difficulty above ligatures passed through *cervix uteri;* profuse hæmorrhage from common iliac vein; bladder accidentally ruptured.		Death immediately after operation, from combined shock and hæmorrhage.	N. York Med. Journal, Dec., 1865, p. 188.
14	Nov. 16, 1865.	Dr. C. H. F. Routh, London.	26, Married	Abdomen began to enlarge 17 months previously—at first very slowly; no children; one miscarriage; no menorrhagia; fluctuation distinct; uterus apparently normal.	Anæsthesia by chloroform.	Gastrotomy as usual; adhesions slight; sac tapped, and seropurulent fluid withdrawn; sac then closed by ligature, and replaced; hæmorrhage from mesentery copious, and controlled by actual cautery.		Death from exhaustion, at end of 2d day after operation.	Trans. Obstet. Soc. of Lond., vol. viii., p. 122, *et seq.*
15	Febru'y 1868.	Prof. E. R. Peaslee, N. York.	Not stated.	Tumor detected several years before; growth slow; tapped once—fluid chocolate-colored; fluctuation distinct; uterus normal and freely movable.	Not stated.	Gastrotomy by median incision; extensive adhesions; tumor tapped, and then found to spring from *fundus uteri;* pedicle ligated, cut, and returned to pelvic cavity; linen tent left in abdominal wound.	Recovery complete; in perfect health 2½ years after operation.		Communicated by letter from operator to reporter.

16	June 10, 1868.	M. Demarquay, Paris.	43, Single.	Tumor appeared in right iliac region two years before; abundant menorrhagia before appearance of tumor; fluctuation and mobility distinct; no uterine examination; health fair.	Chloroform given.	Gastrotomy by customary incision; sac tapped and bloody fluid drawn off; tumor now found of uterine origin, and ablation of uterus effected with *écraseur*; hæmorrhage checked by actual cautery; wound closed with metallic sutures.		Death, from exhaustion and hæmorrhage, in 36 hours afterward.	L'Union Méd., Sept. 22, 1868, p. 431.
17	Aug. 31, 1868.	Prof. E. Kœberlé, Strasb'rg.	34, Single.	Tumor observed 2 years previously, although suspicious pelvic and abdominal symptoms existed for 5 years; increase rapid; health feeble; *facies uterina* marked; tapped once; tumor large, irregular, bosselated; fibro-cyst of uterus diagnosticated; uterine examination impossible.	Anæsthesia by chloroform.	Gastrotomy by short incision, then enlarged; tapping, very little fluid obtained; tumor found to arise from posterior wall of body of uterus; pedicle strongly ligated, and tumor cut away; hæmorrhage copious—arrested by actual cautery and styptics; uterus not incised or removed; wound closed by metallic sutures including peritonæum.	Recovery complete in 29 days; health good 6 months afterward.		Gaz. Hebdom., 26 Février, 1869, p. 135, *et seq.*
18	Nov. 2, 1869.	C. C. Lee, N. York.	45, Single.	Abdominal enlargement noticed 2 years before; increase rapid; tapped once; general health fair, but patient chlorotic and depressed; menstruation irregular; no menorrhagia; *facies uterina* very marked.	Anæsthesia by chloroform.	Gastrotomy as usual; sac tapped, and large amount of brownish fluid withdrawn; formidable adhesions to mesentery, intestines, and pelvic organs; no pedicle; cyst developed from fundus uteri, from which it was detached with scissors; uterus not removed; hæmorrhage copious—checked by ligatures and styptics; small intestine lacerated; wound closed with metallic sutures, including peritonæum.		Death, from exhaustion and incipient peritonitis, 31 hours after operation.	*Vide supra.*
19	Nov. 29, 1869.	Dr. J. L. Little, N. York.	44, Single.	Patient began to enlarge 4 years previously; increase slow; fluctuation distinct in tumor which gave all typical signs of ovarian cyst; menstruation not noted.	Not stated.	Gastrotomy as usual; adhesions numerous; no pedicle; sac tapped, but origin of tumor not found; a portion of the sac drawn through the wound, cut off, clamp applied, and wound closed by silver sutures.		Death from exhaustion in about 10 days; after death the tumor was found to be a fibro-cyst springing from the *cervix uteri*.	N. Y. Med. Rec. Jan. 15, 1870, p. 520. Revised by operator.

ART. II.—*The Climates of the Pacific Coast.*[1]

FROM the analogies of continental position the climates of our Pacific coast are, in fundamental character, clearly assimilated to those of the western coast of the Eastern Continent. Among the most striking points of resemblance may be noted the abrupt and eccentric northward deflection of the isothermal lines. A single example from Blodgett's "Climatology" will sufficiently illustrate this fact.

The annual isotherm of 50° Fahr., passing through London, Eng., lat. 51° 30′ N., is depressed southward more than 10° in crossing the Atlantic Ocean, striking the American coast near New York, lat. 40° 42′ N. The northern deflection of this isotherm on the European coast is obviously the result of the system of warm-water currents springing from the Gulf Stream. These currents bear the heated waters of tropical seas diagonally across the Atlantic, ameliorating the rugged northern climates of Europe, and placing them upon a par with American climates at least ten degrees farther south.

This same isotherm passes across the Western Continent almost directly westward as far as long. 103° W., where the elevation of the Rocky Mountain plateau causes it to dip suddenly southward, as far as the latitude of Santa Fé. Thence, crossing the Rocky Mountains westwardly, it trends N. W., almost parallel with the Pacific coast, to the north end of Vancouver's Island, lat. 51° 30′, about the same northing as upon the European coast. The cause of this elevation of the isotherm was indicated by Lieutenant Maury ("Physical Geography of the Sea"), in a system of warm-water currents, similar to the Atlantic Gulf Stream and its branches. Only the rudimentary points of the Pacific system of currents were then known, but Maury's theory has since been amply verified by later and very careful observation. Captain Kerhallet, of the French Imperial Navy, in his "General Examination of the Pacific Ocean," has clearly traced the analogue of the Atlantic Gulf Stream in the "Japan Current" of navigators, called by the Japanese themselves Kuro Siwo, or Black Stream,

[1] The name of the author of this article has been mislaid. If he will kindly make himself known, we shall be glad to give him due credit.—EDS.

from its deep blue color, in which, as well as in other remarkable points, it strongly resembles its Atlantic congener.

This Japan Current, or Kuro Siwo, results from two currents of heated water from the Indian Ocean: one passing through the straits of Malacca and the China Sea, and the other skirting the eastern shore of the Philippine Islands, at the northern extremity of which the two currents unite. Opposite the Japan Islands, this united current again divides. Its main branch, trending E. N. E., strikes our Pacific coast about midway between Vancouver's Island and Sitka Island. The waters of this current near its southern edge, in lat. 21° 20′ N., long. 163° 20′ W., were found by M. de Tessan, commander of the French frigate Venus, to be 4.30° Fahr. hotter than those just outside the current. The difference would, doubtless, have been much greater, if the observation had been made with water taken from the main axial line of the current.

On the 24th of January, 1856, Lieutenant Silas Bent, U. S. N., read before the American Geographical and Statistical Society of New York a very learned and able memoir upon the Japan Current, or Kuro Siwo, from which the following passages are taken:

"The softening influence of the Kuro Siwo is felt on the coasts of Oregon and California, but in a less degree, perhaps, than that of the Gulf Stream on the coasts of Europe, owing to the greater width of the Pacific Ocean over the Atlantic.

"Still the winters are so mild in Puget's Sound, latitude 48° N., that snow rarely falls there, and the inhabitants are never enabled to fill their ice-houses for the summer; and vessels trading to Petropaulovski and the coast of Kamtchatka, when becoming unwieldy from accumulation of ice on their hulls and rigging, run over to a higher latitude on the American coast and thaw out, in the same manner that vessels frozen up on our coast retreat again into the Gulf Stream, until favored by an easterly wind."

The deficiency resulting from this feebler impulse of the Kuro Siwo upon our coast is amply compensated by the narrowness of Behring's Strait, through which a much smaller volume of floating ice is discharged than that immense mass

which sweeps down through Davis Strait, and from the open sea east of Greenland into the Atlantic, rapidly absorbing the heat brought up by the Gulf Stream. The projecting peninsula of Alaska, with its outlying islands, also deflects far to the west the reactionary cold-water currents from the Arctic Ocean, and protects our western climates from their depressing influence. The southeast winds, laden with moisture from the tropical atmosphere of the ocean, prevail along the coast during the winter or rainy season. Their latent heat, set free by precipitation, combines with the general influence of the Kuro Siwo in elevating the atmospheric temperatures, and in bending northward the isothermals.

The above facts furnish a simple and satisfactory explanation of the ameliorated climates of our Pacific coast. Puget's Sound is found to be on a par with New York City, while British Columbia and the southern part of our new Territory of Alaska are in the same climatic parallels with New York State and New England.

There are, however, some remarkable variations from the standard climates of Europe in those of our Pacific coast. These points of difference are especially appreciable in the sensible climate, and in all its practical relations. First, there is found along the Pacific coast an unexpected lowering of the normal curve of temperature, through successive hours of the day, and through successive months of the year. In other words, the theoretic temperature which should have resulted from known conditions is modified and depressed by causes hitherto unsuspected, but which have of late become matter of both common and scientific observation.

Among the causes of this departure from the theoretic standard is found the peculiar play of the oceanic currents. In its passage through the immense volume of the Pacific Ocean, the Kuro Siwo has parted with its surplus heat, and has also incorporated some of the cold waters of the reactionary Arctic currents. While it has thus raised the general temperature of both air and sea, it has become a current of comparatively cold water itself. At its impact upon our coast it divides into two branches, one of which flows along the coasts of Oregon and California, as far as Cape San Lucas, remarkably depress-

ing the local climates in the immediate neighborhood of the sea. The effect of this cold current is particularly sensible in such localities as San Francisco and Monterey, producing a degree of cold in midsummer which is felt as a harsh, abrupt, and unnatural displacement of normal conditions. The effect of this general depressing influence is reënforced, during the summer, by the cool northwest winds, which prevail during the rainless months from June to November. The scope of this reactive tendency, however, is limited to the local climates of the coast.

Another and very important difference between the climates of the Pacific coast and those of Europe is found in the comparatively narrow range of both barometric and thermometric oscillations. These are but the scientific expression of those conditions of majestic equability indicated by the name Pacific Ocean, whose significance and appropriateness become more and more striking as our knowledge of it increases. For this remarkable exemption from extremes of variation, our Western coast is indebted to the great width of the ocean. The cyclones generated in that mighty caldron of atmospheric disturbing forces, the Gulf Stream, are hurled across the narrower volume of the Atlantic, with a force sufficient to be severely felt upon the European coast. A class of storms entirely analogous, and accompanied by electric and calorific changes equally marked, prevails upon the coast of Asia, and has been traced for some distance along the line of the Kuro Siwo. But the mighty mass of the Pacific waters calmly absorbs their fury and prevents disturbing forces from reaching our shores.

The atmospheric changes of our Pacific coast are consequently more uniform and of minor range. Comparing the averages of winter and summer temperature along the isothermal line of 50° Fahr., the variations on the Atlantic coast are found to be about double those on the Pacific. As a specimen of extreme variation, it may be stated that the range of temperature at San Francisco from January to July is only 8.3° Fahr., whereas the variation at Washington, D. C., is 44.2° Fahr., or more than five times as great.

In regard to barometric variation, Blodgett, in his "Climatology of the United States," p. 193, remarks:

"In distinction from the Eastern States, the slight range of all other conditions is very noticeable, in non-periodic as well as periodic vibrations. The barometer varies little, and that through slow and long-continued movements, rather than in the abrupt manner characteristic of these latitudes elsewhere. If there are symmetrical gradual changes also, they are far more rare at any season, and they never occur in summer. The contrast between San Francisco and Norfolk or Charleston is very great in this respect, and, instead of the abrupt and extreme oscillations so constant on this coast, there is nothing there which may be ranked with such movements, and uniformity is nearly as well marked as in the tropics."

The absence of disturbing meteorological forces, as indicated by this narrow range of barometric and thermometric oscillation, is sufficient to acco unt for that freedom from explosive electricity which enables the climate of California to meet so accurately the delicate requirements of the silk-culture. The deficiency in electrical excitement, and especially the absence of atmospheric concussion, with other favorable conditions, secure the practicability of four crops of silkworms during the growing season—a fact whose influence upon the productive industry of the country is beyond all present estimate.

A still more prominent point of difference between our Pacific climates and those of Europe is found in the periodicity of aqueous precipitation. The arrangement of the year into two seasons—wet and dry—instead of four, is found only in the lower latitudes of Europe and Africa. But on our Pacific coast it is felt north of the Columbia River as far as latitude 48°. Nearly all the rain in California falls between the first of November and the first of June. The remainder of the year, called the "dry season," is almost rainless. According to Blodgett's hyetal charts, the average mean annual fall of rain in the State is not less than twenty-two inches. This average decreases toward the southern extremity of the State, and in the Colorado Desert it is almost nothing. In the northern part of the State and on the western slope of the Sierra Nevada the average is stated at thirty-five inches per annum. This general average is about one-half of that of the States east of the Mississippi.

This average increases northward. At Humboldt it is about forty-five inches, and at Vancouver's Island about sixty-five inches per annum. At Port Townshend, on Puget's Sound, the distinction between the wet and dry seasons is practically obliterated, the fall of rain being distributed throughout the year. At Sitka, lat. 57° north, the fall of rain and snow becomes excessive in all parts of the year. The mean annual deposit at this point is about 89.9 inches.

The explanation of this feature of the Pacific climates is found partly in the peculiar chorography of the country. The Sierra Nevada, whose general altitude exceeds that of the Rocky Mountains, stands like a wall, six or eight thousand feet high, practically bisecting the lower and rain-bearing strata of the atmosphere of its eastern and western slopes. The climate west of the Sierra is essentially an insular climate, modified to but a limited extent by continental influences. The periodic winds of the Pacific are the agencies which practically control precipitation. During the winter or rainy season these are from the southwest, south, or southeast. Blowing from the saturated atmosphere of the intertropical ocean, they not only assist in raising the winter temperature, but also supply the copious moisture precipitated during the rainy season. During the dry season the prevailing winds are from the northwest. Even if these should become saturated in blowing over the colder waters of the North Pacific, it would be impossible for them to form rain-clouds when passing over the land. The surface heated by the summer sun radiates such an amount of heat as to elevate their temperature above the point, not only of precipitation, but even of condensation into clouds. This absorption of surface heat also lowers the summer temperature, and thus conspires with other influences to produce that low range of thermometric oscillation before alluded to.

These general controlling elements, combining with the unique chorographical features of the country, give rise to a matchless versatility of local climates. These, acting upon a soil of exquisite and exhaustless fertility, yield, in answer to the processes of an intelligent agriculture, a variety, luxuriance, and delicacy of productions—vegetable, cereal, fibrous,

and fruital—unparalleled on the face of the earth. The specific character and influence of these local climates will be noticed in connection with the different branches of agricultural production.

The salubrity of these climates, with a few local exceptions, is unsurpassed. Their freedom from those injurious variations of temperature characteristic of the climates east of the Mississippi was a matter of common report long before it was verified by scientific observation. The climate of California has been described by most trustworthy observers as genial and invigorating. The most active out-door labors may be performed at all seasons of the year and at all hours of the day even in the most sultry valleys. This results from the dryness of the atmosphere, which prevents the few hot days from being at all enervating. Such a thing as a hard winter, as understood east of the Mississippi, is unknown even as high up as Washington Territory. All reports seem to coincide in the statement that the Pacific coast presents the most desirable combinations of climatic influences upon earth.

ART. III.—*Description of a Large Permanent Galvanic Battery for Medical Use.* By WILLIAM A. HAMMOND, M. D.

A GALVANIC battery for medical purposes should be capable of furnishing an equable current of sufficient quantity and intensity, as may be necessary for each individual case; should not require much care, or be liable to get out of order. All these essentials are provided for in the instrument now to be described:

Some time since my attention was drawn, in another connection altogether, to the simplicity and efficiency of Hill's cell as a generator of a constant and most equable galvanic current. After an examination of its construction and action, I was satisfied that, for medical purposes, it was vastly superior to every other form of element which had come under my observation. At my suggestion, the Galvano-Faradic Manufacturing Company of this city has constructed, under the su-

perintendence of Mr. Bartlett, a permanent battery, which, for office or hospital use, is of inestimable value. When erected, it becomes, as its name implies, a permanent fixture. Two of these have been made, one for myself, and the other for the New York State Hospital for Diseases of the Nervous System.

The cells used for this battery have been hitherto applied to telegraphy. They possess, however, in an eminent degree, the peculiar qualities that are essential for a galvanic battery for therapeutic purposes. The battery itself is simple in construction, easily managed, exceedingly economical, utilizing almost all the materials consumed.

Each cell contains about half a gallon of fluid. A disk of sheet-copper is laid flat on the bottom of the cell. To the under side of this is affixed a copper wire, covered with gutta-percha. The copper sheet forms the *negative plate;* the insulated wire which rises to the top of the cell, the *positive pole.* Two or three inches below the upper margin of the cell is suspended, by a brass hanger, a thick, disk-shaped plate of zinc, concave on the lower side, with a round aperture in the centre. This is the *positive plate.* To the hanger is attached a binding screw, and this forms the *negative pole.* Three cells *in situ* are represented in Fig. 1.

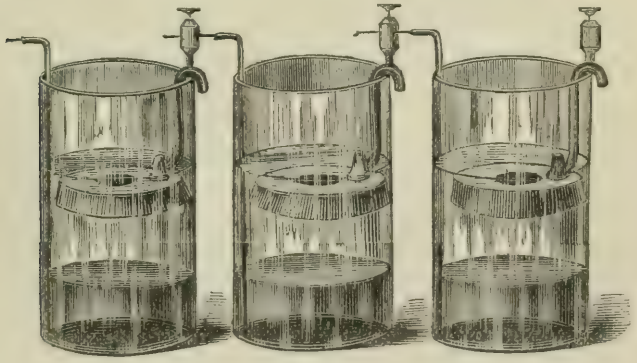


Fig. 1.

The body of the battery fluid is formed of a solution of sulphate of zinc. Occasionally, as required, crystals of sulphate of copper are dropped through the central aperture in the zinc to the bottom of the fluid. These dissolve, and pro-

duce a layer of blue liquid, which covers the copper. Thus, we have copper in the bottom of the cell, immersed in a solution of copper, zinc suspended above, immersed in a white liquid, the solution of zinc. (See engraving of these cells.) The mode adopted in other batteries to separate the fluids consists in using a porous diaphragm, or cup, within, and surrounding which are placed dissimilar metals and fluids. The porous septum, it was thought, would allow the current to pass, and yet prevent the admixture of the diverse elements. It has, however, been demonstrated that, when two such liquids, and even two gases, are thus separated, they will invariably become mixed. In this battery, without the intervention of any diaphragm, the denser liquid, the blue, remains in the bottom of the cell, the lighter one overflows and rests upon it; thus arranged, there is less liability to diffusion or mixing than if the two liquids were placed side by side, in vertical columns, with a porous partition between them.

The central aperture in the zinc plate also admits the introduction of a hydrometer to measure the density and strength of the liquid. Provision is also made for preventing too rapid evaporation of the fluid. The occasional addition of a little water, and every three or four days dropping in a few crystals of sulphate of copper, is nearly all that is required in the management of this battery. Further directions for for its preparation, *modus operandi*, and care, may be obtained from the manufacturers.

Fig. 2 represents Mr. Bartlett's "Improved Galvanic Regulator for Hospital Batteries," uniting current-selector, commutator, galvanic-current interrupter, current modifiers, and galvanoscope, in one construction, which is a very decided advance upon the similar instrument of Siemens and Halske.[1]

The current-selectors (A1, A2) enable the operator to bring into action any number of cells, from one to sixty. If we desire to use the current from twenty-four cells, we turn the winch A2 to 20, A1 to 4; while, if we wish to use only eight cells, the winch A2 is moved to the letter O, the winch A1 to 8. When both winches are at O, there is no current passing.

[1] See my translation of Meyers's Medical Electricity, second edition. New York: D. Appleton & Co., 1870, p. 107.

The commutator (C) changes the *polarity* of the current. When it points vertically, the current ceases to pass. When the winch of the commutator is on N (normal), the positive current passes through the binding-post (C), and the negative through the binding-post (Z). If the winch rests on R (rever-

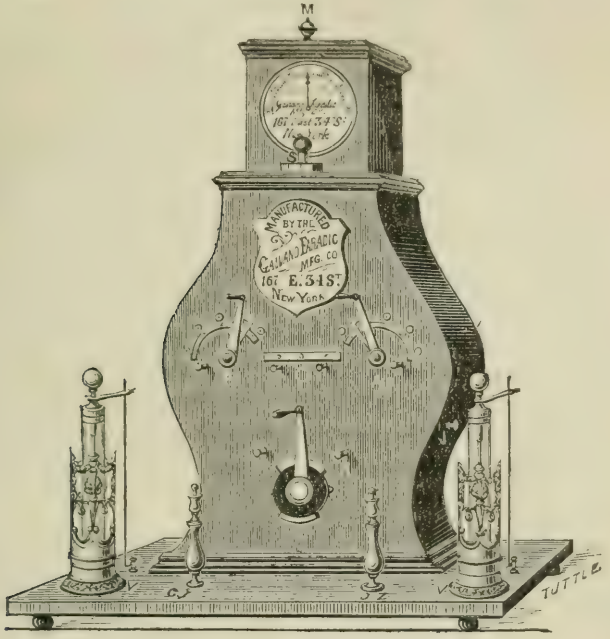


Fig. 2.

sal), the positive passes through Z, and the negative through C. The galvanic-current interrupter controls the interruptions of the current—by turning the knob J to the left, the current is interrupted; when the knob is turned to the right, the current flows on uninterruptedly.

The current-modifiers (V V) weaken or intensify the strength of the current. By elevating the rod, or piston, of that on the right, the current flowing from the binding-post (Z) is weakened. Hence, if the winch of the commutator (C) is resting on N, the positive current only will be modified; if the rod on the left side be at the same time raised, the negative current will also be controlled, and *vice versa*. Thus either cur-

rent separately, or both conjointly, can be modified at pleasure.

The Galvanoscope (G).—If the conducting-pole cords, or electrodes, are placed in contact with any part of the body, and the stopper (S) be removed, the strength of the current will be denoted by the extent of the deviation of the needle from the point 0. On the knob (M), above the galvanoscope, there is a small magnet-rod. If the circuit be open, and the needle deviates from the point 0, it can be replaced by turning the knob to the right or left.

The whole arrangement forms a most complete and indispensable galvanic battery for hospitals, combining constancy and every requisite accompaniment for regulating the current. It reflects great credit on the enterprising manufacturers.

My own battery is placed on shelves in the cellar, and the wires brought through the house to the current-selector on my operating-table. It has, at the time of writing this, been in operation many times every day for thirty-two days, and the galvanometer shows no weakening of the current. In all that time no sulphate of copper has been added to the solution in the cells. Its action has been perfectly satisfactory in every respect.

Clinical Records from Private and Hospital Practice.

I.—*Report of the Surgical Cases treated in the St. John's Riverside Hospital, Yonkers, N. Y., during the Year* 1870. By J. H. Pooley, M. D., Surgeon to the Hospital.

Dr. George Hayward introduces his first report of the surgical cases of the Massachusetts General Hospital for 1837–'38 with the following sentences: "I therefore close with the expression of a hope that those who have the charge of similar institutions, in our country especially, would from time to time give reports of all the cases that come under their care. In this way our hospitals will be rendered still more useful to the public."[1]

[1] Surgical Reports and Miscellaneous Papers on Medical Subjects. By George Hayward, M. D. Boston, 1855, pp. 58.

As a proof of my approval of the doctor's example and advice, I have drawn up the following report of the surgical cases occurring in this hospital during the first year of its existence. Should the number and importance of the cases seem too insignificant to justify their publication, I can only plead that this is but the beginning, and hope that in future we may have material enough to present to make our reports both interesting and instructive.

It has been for many years the fashion for large hospitals in Great Britain, and more recently in this country, to send forth annual volumes called "Reports," which are in simple truth nothing of the kind, but volumes of elaborate essays on medical and surgical subjects, not always written by officers of the institution under whose name they are published, and often from material gathered outside its wards. This paper will be simply a clinical record taken from the pages of the hospital case-book, with such running commentary thereupon as suggests itself. No one can value more highly the advantages derived from the study and practice of large institutions of this kind, no one would more highly prize a connection with such a one, or feels more envious of the favored few who enjoy such a privilege; but I believe, nevertheless, that accurate study of a few cases in a small hospital is not without value either to the practitioner himself or the public at large, and he who waits for great opportunities before exerting himself will be left waiting all his life.

Yonkers is in Westchester County, on the east bank of the Hudson, seventeen miles from New York, and almost hourly accessible by rail and steamboat. It is a village of about fifteen thousand inhabitants, and rapidly increasing.

Owing to its number of factories and large poor population, the need of a hospital has long been felt, especially by the physicians, and several efforts for that end had been made, but without success, until in the beginning of 1870 the present institution was established through the exertions and under the auspices of St. John's Episcopal Church.[1]

[1] In June of the present year (1871) an attempt was made to enlarge its usefulness, and liberalize its management, by the election of a number of prominent gentlemen outside of the Episcopal Church as trustees; the result of this movement remains to be seen.

And just here a valuable hint for those contemplating similar enterprises may be found. Previous efforts had failed because they aimed at too much at first; the existing hospital was successfully founded and has continually increased in usefulness because its managers were willing to begin on a small scale, and, to use an apt but homely phrase, "creep before they walked."

The hospital was opened in the beginning of January, 1870, in a small frame house on Warburton Avenue, capable of accommodating only six or seven patients. By May of the same year they were able to move into a much larger building of brick, capable of accommodating twenty-five patients, and situated on Woodward Avenue, directly overlooking the Hudson River, and thoroughly ventilated by its refreshing breezes. Since then they have purchased the property and made many improvements, which have greatly increased its adaptability to the purpose for which it is used; and, though it is not yet fully up to the standard of modern scientific requirements in hospital structure, its friends expect before long to see it supplanted by a new building faultless in every appointment.

The building is square, with a central hall, and a small wing on the southern side. The wing is devoted to kitchen and laundry purposes. The part of the main building (which is three stories high) is used, on the first floor, for dining and reception rooms, on the second floor for the accommodation of the employés.

The accommodation for the patients consists of three principal wards, similar in size, one in each story, and capable of holding seven patients each, and three smaller rooms on the top floor, capable of accommodating one or two patients each. The building has no special means of ventilation, but has abundance of windows, and, particularly in the upper wards, is very well ventilated. Upon its first organization there was no division of the staff into surgical and medical; it was not until the end of the year that this division was made, when the entire surgical service was intrusted to me.

It will be seen from this fact that the first cases were treated alternately by all the members of the staff, as they came on duty one after another; when cases under other gen-

tlemen are referred to, their own language will be used, though it may not be deemed necessary to refer to them by name.

It was my intention to have written this report some months earlier, but I have no reason to regret that it has been delayed, as the lapse of time will enable me to make some of the histories more perfect than would have been possible had it been done sooner; more especially is this true in some cases of skin-grafting where the first sanguine anticipations of success must be modified by subsequent observation.

During the year 1870 there were received into the hospital twenty-five surgical cases, as follows, viz.:

Chronic ulcer of the leg	5
Fracture of the leg	4
Railroad accident, with fracture of skull	3
Hip-disease	2
Syphilis, two different forms	2
Pott's disease of the spine	1
Scrofulous disease of the ankle	1
Hæmaturia	1
Malformation (deficiency of uterus and vagina)	1
Stone in the bladder	1
Burn	1
Frost-bite	1
Sprained ankle	1
Diffuse periostitis	1
Making the total number of cases	25

Of these twenty-five cases there have been:

Discharged cured	11
Discharged improved	4
Died in hospital	4
Remaining under treatment	6
Total	25

With regard to the four deaths that have taken place in the surgical department of the hospital, it is proper to state that three of them were cases of railroad injury, with fracture of the skull, all of whom were brought in in an insensible and dying condition, and none of whom survived their injuries for twenty-four hours. Such cases it would seem hardly proper to include in hospital statistics, as, although hopelessly beyond human aid, and not really under treatment,

they are, unless carefully discriminated, apt to vitiate their value by unduly raising the rate of mortality. The other death which took place was from diffuse periostitis, possibly osteo-myelitis as well, complicated with pyæmia. This case will be noticed in detail further on.

There were only two operations performed during this year: one in a case of congenital absence of the vagina and uterus; this case will be found reported in full in the *American Journal of Obstetrics*, May, 1871, and will not be further referred to here; the other was a case of stone in the bladder, in which the lateral operation of lithotomy was successfully performed.

To take up the cases we deem worthy of special notice in the order given in our list, we begin with

Chronic Ulcers.

The first case admitted into the hospital was one of a large ulcer of the leg, and I very much regret that I had not at that time heard of M. Reverdin's plan of cutaneous transplantation; I had in contemplation at one time the transferring of a large piece of integument attached by a pedicle, according to Prof. Hamilton's method, but it was not deemed prudent, and he was treated only by ordinary palliative methods, and strapping, with but indifferent success.

The following is a brief abstract of the case:

Case.—James Griffin, aged fifty, native of Ireland, laborer, admitted January 26th. States that when about ten years old he and all the family had "the fever" in Ireland; that at that time a sore broke out on his leg, which has troubled him more or less ever since; the leg has never been well.

He came to this country when about forty years of age, and has been since then frequently under treatment, working at times until he could not stand any longer. He came to Yonkers about a year and a half after his arrival in the country, and shortly afterward moved to Hastings, where he worked in a marble-quarry. From repeated "knocks" (as he expressed it) and over-exertion, the limb got very bad, and he went into the county hospital (attached to the poor-house) for three months, without much benefit; indeed, he has ever

since been almost wholly incapacitated for work, and latterly quite so.

On admission, his general health was better than could be expected; indeed, might be called good.

On the front of the right leg, from about two inches above the ankle-joint, a deep and offensive ulcer extends up the limb four and a half inches, leaving the muscles bare (which, with their tendinous interspaces, can be plainly seen), and involving almost the entire circumference of the limb. The edges of the ulcer are ragged, thickened, and everted, and the foot and limb very much swollen and reddened to the knee.

In addition to the swelling, the integument of the foot and leg is curiously thickened and tuberculated, bearing a strong resemblance to the appearance seen in elephantiasis; this condition is most marked in front over the flexure of the ankle-joint. There is no need to particularize the treatment, for, as before remarked, it was of very little avail; indeed, experience teaches us plainly enough that very little is to be expected in a case of this severity from any of the plans hitherto in use.

The man was discharged at his own request, May 17th, and two months afterward died of apoplexy. At the time of his death his leg was as bad as when he entered the hospital. If it had been healed up, would not some have attributed the apoplexy to healing so large and chronic a sore? During the last summer I saw at Manhattanville a case of ulceration of the leg more extensive even than the one above described; the ulceration extended from the ankle to the knee, completely surrounded the limb, and exposed both the muscles and bone; it was becoming gangrenous, and the constitution was seriously involved. Amputation was advised, but refused, and the patient soon afterward died.

Of the four other cases of ulceration, two are too trivial to be worth notice, but the other two deserve attention, as in them skin was successfully grafted by Reverdin's method.

Case.—John Vaught, aged ten years, native of the United States, admitted November 8th. Four years before, the patient met with a railroad injury, by which almost all the integument was stripped from the lower third of the left thigh; this had cicatrized, with the exception of a triangular spot on the

inner side, just above the knee, about two inches in its greatest length, which obstinately refused to heal. Previous to his admission every remedy had been used to encourage the reparative process, but without success; Nature had almost completed the work, but seemed utterly incapable of carrying it any further.

November 9th.—I tried the transplantation of a small piece of integument, according to the plan suggested by M. Reverdin, into this ulcer, which was quite healthy in appearance.

A small piece of integument, about the size and shape of a grain of rice, was taken from the corresponding part of the opposite limb; this was removed so as barely to cause a slight oozing of blood; a groove was then cut in the middle of the granulations, and one end of the little graft inserted into it, and the raw surface turned down over the sore. It was kept in place by adhesive plaster and a bandage.

November 12th.—The graft was examined, and easily distinguished lying among the granulations; it looked white and sodden; the edges of the sore have improved in appearance.

November 19th.—The little piece of new skin has begun to throw out minute lines of cicatrization on every side, and there is apparently an attempt on the part of the contiguous edges of the sore to meet them.

November 22d.—The transplanted skin has increased to about twice its original size, and, although the cicatrization from the edges has nowhere coalesced with it, it is advancing, and the sore is nearly healed.

A few days after this the advancing edges met the central island of engrafted skin, and November 25th the patient was discharged cured.

In this case the ulceration was small, and yet it utterly refused to heal under all previous plans of treatment; and after the transplantation or grafting of skin the healing process, which so promptly and pleasantly followed, resulted not from any special increase from or growth of the graft itself, but from that stimulation of the surrounding edges of the ulcer, leading them at once to take on a healthy and rapid process of cicatrization, which is the most singular thing in connection with this new method.

CASE.—William H. Handley, aged twenty-five, a native of New York. Admitted December 5th, for varicose ulcer of the left leg. Has had varicose veins of this leg for ten years; an ulcer first broke out three years ago, and has never been completely well since, though nearly so at times.

The ulcer is on the front of the leg, about the lower third, an inch and a half long, half an inch broad at the lower or widest part, and about half that width at its upper part; it has callous, everted edges, its surface not deeply excavated; is indolent and grayish, with numerous dark-red punctations; is covered with a very slight serous exudation; has no appearance of healthy granulation, and is free from pain.

December 6th.—I took a piece of integument, about twice the size of a rice-grain, from the corresponding part of the other leg, and, making a groove in the middle of the ulcer, set in the graft, and covered it with adhesive plaster and a bandage.

December 8th.—Uncovered the sore, and examined the graft; it was in position, presented a white, sodden appearance, most marked on the edges, which looked as if they were melting away.

The ulcer was not again uncovered till the 12th, when the following appearances were noted:

A fine, white pellicle had become detached from the surface of the graft, and lay by its side, having only a minute attachment at the point where the graft was grooved in; the rest of the graft was still discernible, diminished in size and reddened, looking like a large granulation, but of a paler color than the rest of the sore.

December 17th.—The sore has nearly healed, the graft has increased in size, but has taken very little part in the healing, which has gone on from the edges, being apparently stimulated by the graft.

December 23d.—On taking off the dressing, the ulcer was found to be healed.

December 30th.—Patient discharged.

I grafted skin into this ulcer immediately, without waiting for any improvement in its appearance, in order to test what would be the fate of a graft planted upon such an unhealthy

surface; and, although it is undoubtedly desirable that the ulcerated surface should be in a healthy granulating condition, this case shows that it is not impossible for a graft to live and grow on the surface of an ulcer which is far from healthy; and, if it does so live, its behavior is not noticeably different from that recorded under more favorable circumstances.

I have had several other experiences with this new method; it is still in use in the hospital, and the results will be reported from time to time. In private practice I have tried it a number of times, with varying success, although it has done well in the majority of instances. I have also tried the plan suggested by Mr. Fides, of Scotland—of sprinkling epidermic scrapings over the surface of ulcers—three times, but observed no results from it whatever.

I have varied my operations by using pieces of integument of different sizes, up to that of a dime, and also by laying them loosely upon the sore, instead of grooving them in.

As far as my present experience goes, I give the preference to the smaller pieces, and also to the method of inserting them in grooves made in the granulations for that purpose, as they are less likely to be floated away by discharges than when simply laid upon the surface.

There is one question of practical detail in the process of skin-grafting, and that is, as to the exact number of grafts it is advisable to insert, how near together, etc. I should like to hear of the result of trying a larger number than have yet been made use of in any given case.

The second case detailed, that of Handley, did not prove a permanent cure, as, when he returned to laborious occupation, after a few months his ulcer broke out again. It is hardly probable, *a priori*, that, in such a case, skin-grafting, any more than any other plan of treatment, would prevent a return of the disease when the patient resumes severe labor, without careful support of the circulation in the limb. Notwithstanding such a drawback as this, and occasional failures, it still remains a gratifying fact that in this new and simple expedient surgery has received the greatest aid yet devised in dealing with obstinate ulcerating surfaces.

Of the pathogeny or rather histogeny of this process I have

nothing to offer; experiment and study in the future must be left to settle the yet undecided questions with regard to it.

During the year there have been four cases of fracture of the leg, all in male patients, received and treated in the hospital, and these have been the only fractures of any kind, except cases of railroad injury with fracture of the skull. Fractures of the leg are very much the most frequent class of fractures that the surgeon is called upon to treat, especially in hospital practice.

All these cases were treated with plaster of Paris, in the form of a splint, formed by cutting a piece of thick, double-twilled muslin to fit the limb, soaking it in a thin mixture of the plaster before applying it, and then covering the whole with a mould or cast formed of thicker plaster-mortar. When necessary, the limb was kept forcibly extended till the plaster acquired sufficient solidity to prevent displacement.

This dressing has since been abandoned for the simpler and more easily-applied *plaster-bandage;* and yet it is a very excellent dressing, far superior to any form of splint I have ever used, and only surpassed by the plaster-bandage.

One of these cases was compound, and a fenestrum was left at the situation of the wound; this we now consider unnecessary in most cases.

The patients were all able to sit up, and walk about on crutches during the treatment.

In three of the cases sound union took place in four weeks or less; in the other case the fracture was produced by jumping from a railroad train in rapid motion, and there was considerable injury to the soft parts, though no external wound; moreover, two weeks after his accident, while walking in the ward, this man had the misfortune to fall, cracking his dressing, and seriously displacing the fragments.

It was four months before solid union was secured. This case led us to abandon the form of dressing described, in favor of the plaster-bandage, with which such an accident as that mentioned above is almost impossible; still, the plaster-splint and cast, or the splint without the cast, may advantageously be used in special cases.

The three cases of railroad injury all died very soon after admission; in all there was severe fracture of the skull. One

of them is worthy of more particular notice, from the presence of a somewhat unusual symptom, tonic spasm of the muscles on the side opposite to the injury.

Case.—An unknown boy, aged about fifteen years, admitted March 19th, at 6 P. M. Three hours before, he had been struck by a locomotive on the railroad, and had received some attention at the baggage-office before being brought to the hospital.

On examination, there was found a wound, four or five inches in length, on the left side of the head, which had been brought together by sutures; there was another cut, an inch long, over the middle of the occiput; no fracture of the skull was discovered, but the existence of one was inferred from the symptoms. He had a fracture of the surgical neck of the left humerus. He was completely comatose, breathing stertorously, without puffing of the lips, pupils contracted, respirations 40 per minute, pulse 80, very small and feeble, surface of the body cold.

There was marked spasmodic contraction and rigidity of the right side; both upper and lower extremities were so rigid that it was impossible to bend them, thumb drawn into the palm of the hand; complete flaccidity of the limbs on the other side. He was placed in bed, warmly covered, with hot bottles to the feet, and cold to the head. He lay, without any change in his condition or return of sensibility, until 2 A. M., next morning, when he died quietly.

Autopsy.—Eight hours after death. Only the head and left shoulder were examined.

The wound in the parietal region did not extend through the pericranium; there was considerable effusion of dark blood under the scalp.

No discharge from the ears; the membrana tympani was not ruptured. Upon removing the calvarium and examining the brain, no appearance of disease or injury could be found.

There was no fracture of the base of the skull, but, upon examining the removed skull-cap, the part corresponding to the posterior or smaller wound showed a spot where the bone was of a dark, purplish color, as if bruised, the discoloration being caused by minute hæmorrhagic punctations of the ex-

ternal table; at this spot were found two slight fissures, running parallel to each other or nearly so, barely an inch long, and about half an inch apart, without depression of the outer table, but with slight depression of the inner table, a plate of which, slightly larger than the space between the external fissures, was depressed. There was simple transverse fracture of the surgical neck of the left humerus, with considerable displacement, surrounded by a large effusion of dark, semifluid blood; no external wound.

The two cases of hip-disease present nothing worthy of notice. Of constitutional syphilis we had two cases, one an ordinary syphilitic eruption (exanthematous); the other, which would probably be called tertiary, presented a number of external tumors or large tubercles, probably of the variety called gummata, which led to ulceration. The following is the case:

Case.—Dennis O'Connor, aged twenty-eight, native of Ireland, admitted December 12th. Had primary syphilis several years ago. A year and a half ago he noticed a swelling of the left testicle; it was hard and very painful, the scrotum red and shining; it slowly increased, till it became larger than his fist; about two weeks before he came into the hospital, an ulceration formed over the most prominent part of the swelling, where a softened spot had made its appearance; it discharged a thin, watery matter. The ulcer increased quite rapidly, and became very offensive; at the date of admission it was oval in form, two inches in its longest diameter, with everted, undermined edges, filled with sloughs of cellular tissue, and dreadfully fetid.

Two days after the swelling of the testicle, an indolent, boggy swelling made its appearance over the internal malleolus of the right foot; it broke soon after the swelling of the testicle, and with similar phenomena.

It presents at present a conical, doughy swelling, the skin slightly reddened on its summit, and crowned by a deeply-excavated ulcer about half an inch in diameter, with a very fetid odor. There is a similar swelling over the left cheek-bone, which is not yet open; it is rather hard and boggy; summit presents a softer spot; no distinct fluctuation. The ulcers and the unopened tumor are all very painful.

A strong solution of carbolic acid was applied to the ankle, a weaker one to the testicle, some shreds of sloughing tissue removed, and ten grs. of iodide of potassium three times a day prescribed.

December 13*th*.—The carbolic acid, having had a caustic effect, was diluted, and used in this form until the 16th, when, the sloughs having been cleared off, and the fetor subdued, it was changed for ointment of red oxide of mercury.

December 16*th*.—The swelling on the cheek was incised; some sanious matter flowed out.

December 17*th*.—Sores look better, particularly the one on the ankle, which now presents the appearance of a healthy ulcer; very slight discharge from the cheek, from which a few small sloughs were removed.

December 27*th*.—Very great improvement; the swelling on the cheek much diminished, ulcers healing rapidly. Eruption resembling acne on the face, probably from iodide of potassium, the dose of which was diminished one-half.

January 10*th*.—Discharged well. The difference between the progress of the swelling on the face, which was incised, and the others, which had been allowed to open spontaneously, was very markedly in favor of the former; the incision left only an insignificant scar.

The next case which I shall detail is one of hæmorrhage from the bladder, interesting from its obscurity and severity.

Robert Marshall, aged sixty-five, native of Scotland, admitted March 26th. Last December he had an attack of bleeding from the bladder, for which he was treated for three weeks at St. Luke's Hospital, New York; he recovered, and came to Yonkers to reside. His present attack began three weeks ago, when he first noticed some blood in his urine, which has been increasing ever since; at times he has complete retention, from coagula.

He is a large, hale-looking man, free from any disease, except the one for which he is admitted; never had gonorrhœa, or any other venereal or urinary trouble. Tongue clean, pulse 90, sharp and compressible. Urethra free from stricture or irritability; a large instrument passes freely; about a pint of fluid, apparently half blood, withdrawn, followed by some

clots. No enlargement of the prostate, no pain referable to the kidneys.

March 27th.—Syringed out the bladder with a dilute solution of tannin, ordered sulphuric-acid lemonade for drink.

March 28th.—Bleeding more profuse, repeated astringent injection, continue the sulphuric acid.

March 29th.—Hæmorrhage unabated, discontinued syringing, ordered tannin 5 grs. every two hours, and cold cloth to the pubis.

March 30th.—No improvement, patient getting weak, pulse 100, jerking, very compressible.

Continue cold over the pubis, take a small enema of cold water every hour. Gallic acid 5 grs. every two hours.

March 31st.—Slight improvement, continue cold applications and enemata. ℞. Ext. ergotæ, fl. sol. ferri persulph., āā gtt. xx every hour.

April 5th.—Patient improving; continue the cold applications, discontinue the clysters; urine passes freely, but slightly tinged with blood; no tenderness over the bladder.

April 10th.—Has improved in every respect; urine perfectly free from blood, and passes naturally; discontinue the ergot and persulphate of iron; take an anodyne at night, keep quiet in bed, continue the cold applications.

April 15th.—The patient has a return of hæmorrhage from the bladder. The former mixture of ergot and ferri persulphate to be resumed, with cold applications as before.

April 25th.—Decided improvement since last date. Is now convalescent, appetite good, pulse 85, and stronger; sleeps well, walks out when the weather will permit.

April 30th.—Continues to improve; no return of any unfavorable symptom.

May 10th.—A recurrence of the bleeding, not controllable by the ergot and iron, having arisen, gallic acid, 5 grs. three times a day, was ordered.

May 21st.—No improvement. Dr. Ludlow, consulting surgeon to the hospital, saw the patient. Discontinued the gallic acid. Ordered tinct. gent. com. ʒj, ac. nitric. gtt. vj three times a day; hæmorrhage gradually subsiding, pulse occasionally intermitting.

May 31*st.*—Bleeding has entirely ceased, pulse less frequently intermits; appetite, which had become impaired during the last attack of bleeding, has improved. Patient continued about the same until June 3d, when after exercising there was a renewal of the hæmorrhage, rendering the use of the catheter again necessary. Ordered plumb. acet. grs. ij, opium gr. ss., camph. gr. ¼, in pill every four hours.

June 4*th.*—Less blood, but has still to use the catheter. The medicine has not agreed with him, his bowels are disordered, stomach nauseated, and appetite defective. Ordered rest and citrate magnesia.

June 5*th.*—Catheter not needed to-day, but urine still tinged with blood. Ordered decoction of matico ℥j to Oj, half wineglassful three times a day.

June 9*th.*—Appetite has much improved, and he feels as well as usual; urine still somewhat tinged, but he has had no further occasion to use the catheter.

June 15*th.*—As the urine is still occasionally bloody, tried the matico as an injection, but without benefit.

This patient remained in the hospital till the middle of July, continuing to take the matico internally, and keeping the hæmorrhage pretty well under control with mild injections of alum-water thrown in with a syringe, and a No. 6 catheter.

His health remained otherwise good, requiring only an occasional dose of mild cathartic medicine.

There being no probability of a permanent cure, the urine becoming bloody whenever he used much exertion, and the difficulty subsiding with rest, and the use by himself of the alum injections, he was recommended to procure a catheter for the purpose, and about the middle of July discharged.

I saw this man some months after he left the hospital; he informed me that the bleeding still continued to recur whenever he made any unwonted exertion. He was feeble, and looked like a man thoroughly broken down in health; he was not living in Yonkers. I am inclined to suspect that cancerous disease was at the bottom of his trouble.

The next case is one of stone in the bladder, a very rare disease in this vicinity, this being almost the first case of the kind I have known of here, and said to be the first ever op

erated upon in Yonkers. The patient was not a resident of Yonkers, but lived at Hastings, a village a few miles farther up the river, where the prevailing rock is limestone, with which the well and spring water is sensibly impregnated; though, during a residence in the vicinity of many years, I have heard of but one other case there.

Case.—Samuel Elliot, aged fifty-two, native of England, admitted October 14th. He has been suffering severely for two years with symptoms of stone in the bladder, but, although he has been sounded several times, it was only a week before his admission that the stone was discovered. He suffers agonizing pain during the act of urination, which lasts a long time afterward, and is scarcely over before the irritability of his bladder compels him to empty it again; he thus passes his life between the endurance of pain and the apprehension of it. He is pale, feeble, and nervous to an almost hysterical degree; his appetite is poor, and he cannot sleep without anodynes.

The urine precipitates a copious deposit of mucus and pus, but no blood at present, though there has been at times a considerable quantity. There is a slight amount of albumen in the urine, but no casts.

The sound is readily introduced, and the stone distinctly felt and heard; it seems to be a large one; ordered plain diet, mucilaginous drinks, small doses of pot. bicarb., and McMunn's elixir of opium at bedtime.

October 21*st*.—Meeting of the medical staff, at which all were present for consultation in the case. His history and present condition were inquired into; the sound was introduced and the presence of the stone distinctly perceptible to all present. It was decided, after discussing the different modes of treatment, that the lateral operation of lithotomy was most appropriate to the case, and that it be performed on Thursday, November 3d, at 2 P. M.

November 3*d*.—The patient being etherized, I performed the operation of lateral lithotomy in the usual manner, and extracted a calculus, oval in shape, rough on its external surface, of a dirty-whitish color, and weighing upward of two ounces, some of its external layer being crumbled off in extraction. On section it was found to be principally phosphatic, with a

uric-acid nucleus. The patient was removed to bed after the bladder had been freely syringed out with warm water; no tube was placed in the wound, and no application whatever made. When he recovered from his anæsthesia he complained of severe pain, for which he got a teaspoonful of McMunn's elixir, which relieved it, and from this time on he had no pain to speak of.

He had no severe symptoms after the operation, and his relief from the terrible torture he had previously suffered was most marked and gratifying.

November 19*th*.—This morning, being the sixteenth day from the operation, he passed some urine through the urethra without any difficulty or pain; wound half healed.

November 22*d*.—Urine passes entirely by the natural channel.

December 13*th*.—Discharged well.

As possessing some interest in this connection I mention a somewhat extraordinary calculus presented to me by Dr. Sprague, of Fordham. It was found after death in the pelvis of the kidney of a patient who, during life, presented not the slightest symptom referable to the urinary organs, but died of cerebral disease. What appears to be the shorter limb of this branched concretion was prolonged to a length equal to the other by two separate calculi, which lay on a line with it; its exterior is quite rough, and that it should have given rise to no symptom is truly wonderful.

The last case which I have to narrate is one of diffuse periostitis, the most extensive and severe that I have ever seen. Without entering into details, suffice it to say that the attack, which involved the entire tibia of the left leg in a young girl aged fourteen, could not be traced to any recognizable cause. It was preceded by high fever, and soon excruciating pain. Upon making free incisions the periosteum was found detached from the whole length of the bone, which lay at the bottom of the wound quite bare, presenting a somewhat porous appearance, and bathed in pus.

She soon became weak and delirious, with dry tongue and rapid pulse, and, in spite of the most liberal use of tonics and stimulants, she soon showed every symptom of pyæmia, and

sunk and died in three weeks from the commencement of the attack. A *post mortem* could not be obtained, but I infer especially from the pyæmic symptoms the existence of osteo-myelitis, as well as periostitis.

This short report includes all that seems worthy of publication in the surgical department during the first year of our little hospital; but, undoubtedly, every year, as it adds to the usefulness of the institution, will present more material worthy of record. Should this be the case, this report will from time to time be suceeeded by others.

II.—*Details of a Case bearing upon the Question of the Influence of Pregnancy upon Tuberculosis.* By Alex. J. Stone, M. D., St. Paul, Minn., Teacher of Obstetrics and Diseases of Women in the St. Paul School for Medical Instruction.

On the 11th day of June last I was called to see Mrs. Susannah Johnson, of this city. I found her lying on a lounge, looking feeble and much emaciated, with a troublesome cough, and inability to speak above a whisper. Interrogation revealed the following facts:

She was born in Norway, twenty-five years since, of healthy parents. Neither her grandparents, parents, uncles, aunts, brothers, sisters, or cousins, had ever been subjects of phthisis, cancer, or scrofula, so far as her knowledge extended. She had been perfectly healthy up to the time of her removal to America, and since her arrival in this country, up to the time of her marriage, which occurred in April, 1869. After her marriage she had gained in weight, becoming thick set, till, in June last, she weighed one hundred and twenty-five pounds. She had never been confined in her house a single day by sickness until after the first week in September, 1870, at which time she last saw her menstrual flow. From that time on for a month she felt an unpleasant fulness of the lungs, and weight upon them, with inability to take a full inspiration, and a constant craving for more fresh air than she seemed able to obtain, until about the 12th of October, at which time the menses were again due, but did not appear.

Careful questioning revealed no symptoms of any uterine disease having been present. Her menses had appeared during the summer of her eighteenth year, had been about normal in character and amount, and had never been the occasion of any pain. In fact, even the conventional backache had been absent until within the past eight months.

At this time (about the 12th of October, 1870) she thinks that she caught a slight cold, but cannot account for it, as she had been very prudent, and guarded carefully against exposure of any kind. Her cough was dry and irritable, and for a week she raised a little bright blood, thinking, however, that it came from the throat. Her menses failing to appear, she became worried, and sent for a physician, who, after diagnosing a simple cold, and a consequent menstrual suppression, ordered hot foot-baths and iron.

Her cough continuing troublesome, she again applied to a different physician, who diagnosed pregnancy, and ordered a simple cough-mixture. Previous to this time, and subsequently, until after the fifth month, she was entirely free from the nausea and vomiting of pregnancy. The mixture loosened her cough, enabled her to raise freely a light frothy mucus, and relieved the pain which she had for a few days felt in and through her left side.

From this time until seen by me she had consulted several physicians, who had each and all told her that she was "consumptive," and gave her husband the prognosis of a speedy death.

An extreme soreness of the throat, with inability to speak above a whisper, severe night-sweats, and a colliquative diarrhœa, which was rapidly weakening her, induced her husband to make one more attempt.

A careful physical exploration revealed a dulness, on percussion, on the right side through the upper half, and on the left near the apex. Above the nipple on the left side a tympanitic resonance was distinct and circumscribed. On the right side the respiration was bronchial, accompanied with bronchophony; on the left side, broncho-vesicular at the apex, and cavernous at and above the nipple. The heart was very irregular and active, the pulse beating as high as

120 per minute. Abdominal examination revealed a prominence about equal to the eighth month of pregnancy. Pressure easily moved the fœtus from one side to the other, its motions being very strong. Vaginal examination showed the vagina to be dry, hot, and sensitive, particularly so anteriorly near the neck of the bladder, and posteriorly in front of the rectum; the cervix was that of a uterus at about the seventh month.

Prescribing a gargle of chlorate of potassa, and the richest kind of diet, with a modicum of any stimulant which seemed to agree with the stomach, I left her, to be seen again on the 13th, on which day I made a careful laryngoscopic examination, finding the glottis extremely contracted, the vocal cords swollen and apparently œdematous, and the entire mucous lining of the larynx congested and irritable. I painted the larynx carefully with a solution of ten grains of nitrate of silver to the ounce of distilled water, and prescribed a wash of glycerine and chlorate of potassa, with which I taught her husband to paint the throat.

On the 14th, my partner, Dr. J. H. Stewart, saw her with me. Agreeing in the diagnosis, and adding the prognosis of a speedy death, he suggested nothing in the way of treatment. On the 16th I again painted the throat with the solution of nitrate of silver, and, finding it difficult to persuade her to eat any thing containing nourishment, ordered a tablespoonful of fresh cream to be taken every hour, and left a few Dover's powders, one to be taken at night. To relieve the night-sweats, which continued profuse, she was bathed in vinegar and rubbed with dry salt.

Nothing of further interest occurred until the morning of the 9th of July, at 5 o'clock, when her labor-pains commenced. I saw her at 9 o'clock, and found her strong and hopeful, with the vertex presenting, and the head engaging in the superior strait. At 11.30 I found the pains as strong, apparently, but the head resting in the vagina in the same place where it had been lying for the past twenty minutes. As her strength, hitherto so unexpectedly good, began sensibly to diminish, I deemed it advisable to rupture the membranes, which had presented in a very large, tense sac. I was some-

what surprised, on the evacuation of the waters, which were copious, to find a funis presenting, with no pulsation, and with the head so low and the uterus contracting so firmly, that it was useless to attempt to replace it. Two more strong pains delivered the child. I could detect slight motion of the heart, and in a moment the child made an ineffectual attempt to breathe. I immediately tied the cord, and, catching the child by the heels, hung it head downward for four or five minutes, when it gave a loud, quick cry, followed by quite a deep inspiration. The breathing after this seemed labored and slow, and the action of the heart was very feeble. Giving it to the nurse, with directions to place it at once in a warm basin of hot (not warm) water, and to suspend it by the heels occasionally for a moment or two, I turned to the mother, and delivered the placenta, which I found to be of enormous size; little hæmorrhage followed, and, to my surprise, she spoke to me in almost her natural voice. The huskiness and soreness had almost entirely disappeared, and she asked for a little tea and toast, which was allowed her, and which she swallowed eagerly and easily, the first time for nearly two months without discomfort, the stomach retaining it perfectly.

I saw her again at 6.30 P. M., and found her lying quite as comfortable as when I left her at noon, her voice clear and her appetite craving. I allowed her some strong chicken-broth, a cup of tea and some toast, all of which she swallowed without discomfort, and all of which was retained by the stomach. The bowels had moved but once through the day, and gave her no uneasiness at present. She had been free from sweating, and the dropsical swelling of the feet and limbs had considerably diminished. She was still flowing moderately.

Nine A. M. Saw her again, and found her comfortable. Pulse 90. Slight cough, slight expectoration. No pain. Throat very slightly sore. Lochia free. No milk in breasts, nor any tenderness of them. Had one operation during the night, quite consistent. Micturition free. Had eaten a good breakfast, and felt strong and hopeful.

The second day after this visit, at 3 o'clock, P. M., the husband came to me, saying that the lochia had entirely ceased,

that she had vomited her dinner, which consisted of a cup of mutton-soup, and that the soreness of the throat was returning. Every thing that could be thought of was done to reëstablish the lochia, without avail. The next day I again examined the throat, and found the condition similar to that at the last examination. I painted the whole larynx with a solution of carbolic acid in glycerine, and ordered a tablespoonful of gruel with a teaspoonful of wine to be given every two hours.

The following day I again visited her, and again painted her throat with glycerine and carbolic acid. The soreness of the throat was severe, and the stomach and intestines irritable. She had had three stools since 4 A. M. (it was then 12 M.), and complained of tenesmus at that time.

On the 17th of July I invited Dr. Samuel Flagg, of this city, in to see her with me. He diagnosed a solidification of the upper lobe of the right lung and at the apex of the left, with a large cavity above the left nipple, but suggested nothing for treatment.

A few days after this I took Dr. E. H. Lewis, of Cawer, with me to see her. After a careful examination, he agreed with me in diagnosis, and, without suggesting any general treatment further than we were then pursuing, advised the external application of tartar-emetic ointment to the throat, which I at once made thoroughly, and which apparently relieved her for a day or two.

From this time she gradually sank until she died, on the 9th of August.

The child died on the 22d of July. Our best endeavors to obtain an autopsy of either mother or child were unavailing.

The great interest of this case lies in the fact of the inception of the disease at the time of impregnation, and in her past history, she having been entirely well up to the time of her last menstrual flow.

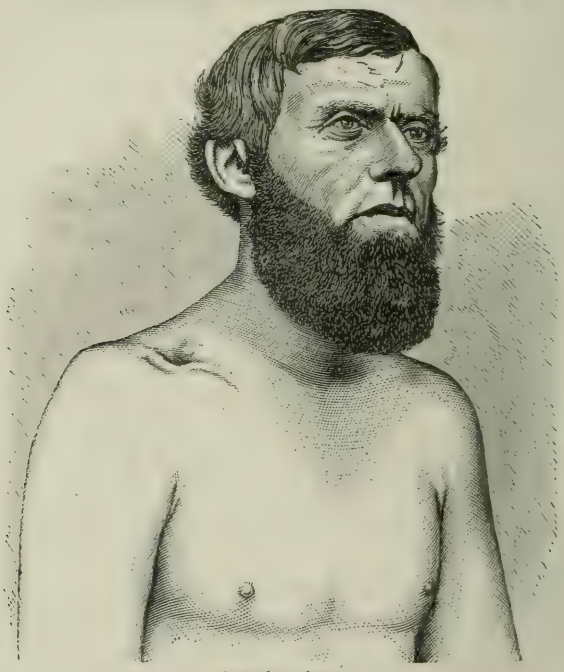
Looking over the literature of the subject carefully, I can find but few authors who do not believe pregnancy to be a condition most unfavorable to the deposit of tubercle, the authorities accepting the theory of antagonism between pregnancy and tuberculosis being too numerous to quote. In fact, I can find but two, M. Dreuilh and M. Grisolle, who reject it,

and of those I merely find reference to the fact in that excellent monograph of Dr. Edward Warrenton, of Edenton, Connecticut, on "The Influence of Pregnancy on the Development of Tubercles."

III.—*Report of a Case of Grape-shot Wound of the Chest.* By John Ellis Blake, M. D., New York.

The bloody wars waged during the last two decades of the world's history are no less remarkable for the numerous inventions to which they have given rise for the saving of life, and the lessening of suffering, than for those which increase man's power to mutilate and destroy. Modern science has

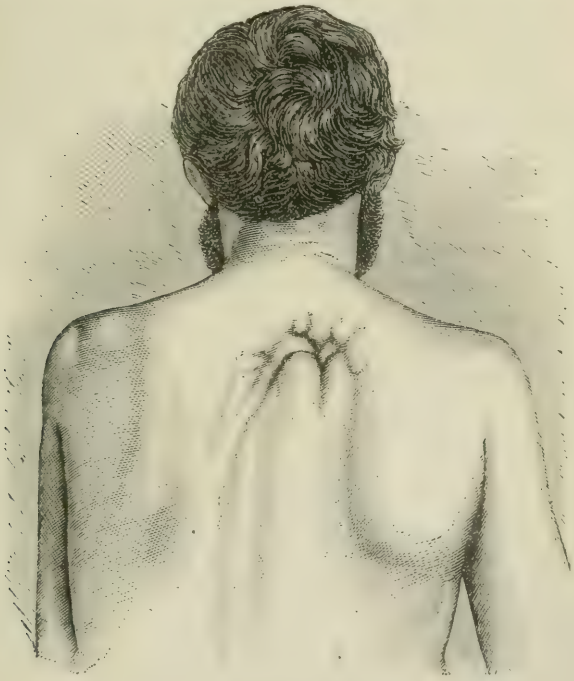
Case of grape-shot wound of the chest.—Anterior and posterior view.



Anterior view.

done so much for surgery, during the period alluded to, that the list of wonderful recoveries from the most serious injuries has been rapidly growing longer. Upon this list, as I am

well aware, are numerous instances of entire recovery after wounds of the chest, penetrating or completely traversing the lung; so many, in fact, that the present case would not have been deemed of sufficient professional interest to merit report, but for certain points giving it a somewhat exceptional character. These are: 1. The completeness of the recovery from a wound in such a *situation*, caused by so *large* a missile. 2. The wonderful escape from injury of most important and vital parts. 3. The complication of fragments of bone remaining for some months impacted in the lung.



Posterior view.

The patient, Colonel George N. Lewis, of the Twelfth Connecticut Volunteers, was recently in New York, and was kind enough to allow examination of his present condition, by several different members of the profession, presenting himself for that purpose, also, at a meeting of the New York Academy of Medicine, and of the Medical Society of the County of

New York. At the meeting of the latter Society, I read as faithful an account of the facts in the case as I could render from the meagre notes of it in my possession. From the same source the present report is made up. The patient was

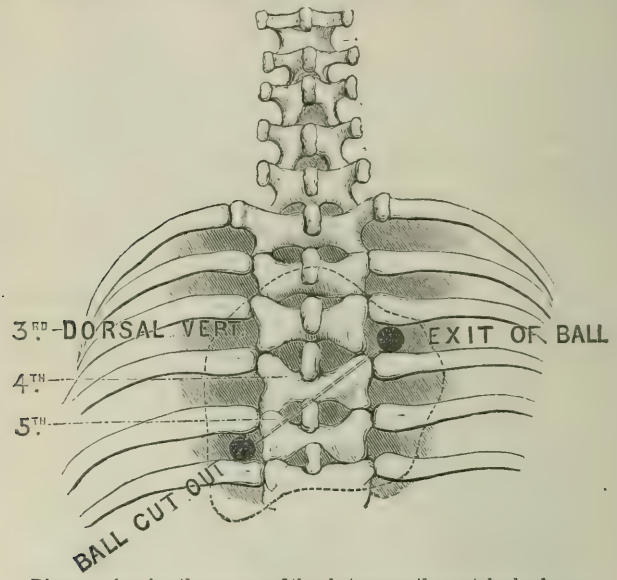


Diagram showing the course of the shot across the vertebral column.

wounded May 27, 1863, before Port Hudson, by an iron grape-shot, one inch and a half in diameter, weighing half a pound. This shot, being deflected from a horizontal course to one almost vertical, by the limb of a tree, struck the patient on the upper surface of the right clavicle, and fractured that bone; then taking a course downward, backward, and toward the median line of the body, plunged through the apex of the right lung, emerging from the chest about the third dorsal vertebra, and in contact with the column. Here, meeting the resistance of the skin, and its force nearly spent, it crossed the spine, and lodged under the skin on the left side near the fifth dorsal vertebra, whence it was



The grape-shot, actual size.

removed on the field of battle by the brigade-surgeon. The patient says that "there was considerable hæmorrhage" at the time the injury was received, but it does not appear that any secondary hæmorrhage took place during the time he remained in the hospital in New Orleans, which was until the latter part of July, or that any occurred in Brooklyn, N. Y., at which city he arrived August 4th, and remained one month. He then removed to his mother's house in Middletown, Conn., where he became my patient in the early part of September. He had then many of the *rational* signs of advanced phthisis. His emaciation was extreme, he being reduced in weight (as he says) to seventy-five pounds!

He had a constant, harassing cough, excruciating pain through the right side, daily chills and fever, with night-sweats, and profuse expectoration of muco-purulent matter. These symptoms had been present from the first, and, in addition, an exhausting diarrhœa had set in at the time he consulted me. This, however, was fortunately readily checked.

In the way of general treatment, he had before this been upon iron, acids, cod-liver oil, and the like remedies, taking also, constantly, morphia. Learning that, on the voyage from New Orleans, a piece of bone had been discharged from the wound, a careful examination of the whole course of the ball was made. The following points were thereby established:

1. That the track of the ball had become converted into a fistulous canal, having a direct communication with the bronchial tubes, as shown by the fact that air issued freely from both openings of the wound, and that, by closing the nose and mouth, the patient could at will forcibly expel air from them, together with jets of pus.

2. That the two extremities of this fistulous canal had become thickened by the deposition of condensed tissue, and so firmly united to the parietes of the chest as to prevent the escape of air or fluids into the pleural cavity. Pneumothorax existed at first, but the lung, when I first examined him, was not collapsed, and even at that early date (September, 1863) had resumed its functions.

3. Fragments of bone could be made out in the course of the ball. One of these was small and quite superficial, near

the anterior opening, and was readily removed from under the clavicle. It was, I think, a portion of that bone. In a direction downward and backward, nearer the posterior than the anterior opening, other fragments could be felt. Now, it should be remembered that, although the ball was cut out from under the skin on the left side between the fifth and sixth ribs, it emerged from the interior of the chest on the right side near the third dorsal vertebra.

This space, then, constituted a short, subintegumental sinus, the axis of which was nearly at right angles to the track of the ball through the lung. It was necessary to lay open this short sinus, and to dissect back flaps of integument from the posterior opening, before the course of the ball (or true sinus) could be explored. Fragments of bone could then be readily felt embedded in the lung, about three and a half inches from the surface. One piece could be made out longer than the others, standing, as it were, across the track of the ball, and entangled and held in some firm lung-tissue below.

As it seemed certain that the patient's symptoms were due to the constant irritation kept up by these fragments of bone, it was determined to remove them at once, if possible. I found, however, the greatest difficulty in doing this, nor did I succeed until after several attempts. The long piece to which I have alluded was the great source of trouble, as it stood in the way of the extraction of the others. It was somewhat movable up and down, and to and fro, and this very mobility increased the difficulty of dividing it, which I tried to do, several attempts at extracting whole having failed. I found it, however, impossible to get any cutting-forceps with sufficiently strong blades through the opening.

I was unwilling to interfere with either extremity of the sinus in any other way than to enlarge them as much as possible by dilatation of the soft parts, the idea of breaking up, at either end of the sinus, the condition of things so fortunately effected by the natural powers not commending itself favorably to my judgment. The posterior opening was the one to be enlarged, if either; and, while it was very evident that the ball had injured the vertebral column, it was impossible to say *just* what had happened, or *what* might not be the possible

result of any disturbance of this part. Very possibly the armamentarium of a metropolitan surgeon would have supplied what was required to effect easy division of the bone. It is perfectly possible, also, that the orifice by the side of the vertebral column might have been safely enlarged. I do not pretend that the operation which was finally successful was the only one, or the best one, that could have been tried. It was fortunately successful.

One great difficulty in dealing with this case arose from the fact that any manipulation in the wound and disturbance of the fragments caused extreme irritation, expectoration of bloody pus, and such incessant, convulsive cough as compelled a cessation of all attempts at extraction, and gave rise, in the patient's feeble state, to most alarming prostration. Thus, it was necessary to allow an interval of many days to elapse between each attempt at extraction. After consulting with several professional friends, some of whom had assisted at these trials, I found myself obliged to inform the patient and his family that neither I nor those with whom I consulted could suggest any other way of setting free the entangled fragments, than by dividing their attachments within the lung. It was clearly stated that there was the greatest danger in blindly cutting in such a situation, that some large vessel would be wounded, and that, even if this should fortunately not happen, the patient was so excessively reduced in strength as to make it not improbable that he would succumb to the shock. However, with a full understanding of the risk, he, with the concurrence of his family, decided that the operation should be done, and it was accordingly performed in the following manner: The patient (who refused at this time, as always previously, to take any anæsthetic) being seated in a chair, the long-impacted fragment was seized with ordinary dressing forceps, and firmly held.

Then a slender knife with a blade three inches in length, of which less than a third, at the extremity, had a cutting edge, was passed by the side of the forceps, and used to divide freely the tissues within.

At the same time, by twisting and making traction upon the fragment, its long axis was finally made to coincide with the direction of the sinus, and it was extracted.

Some small remaining bits of bone and shreds of foreign material were then quite readily removed.

As soon as this was done, pus mingled with blood poured in a full stream from the opening, and also welled up into the mouth and nose.

The amount of blood, however, lost at this time was very small, but, a few weeks afterward, the patient having imprudently exposed and over-exerted himself, had two very copious hæmorrhages. The quantity of pus poured out at the time of the operation, and for thirty-six hours afterward, was so great that I believe the removal of the pieces of bone opened a large cavity in the lung filled with it (a sort of pocket, in fact). The patient's condition for several days after the operation was highly critical. He was very feeble, and scarcely able to make the exertion necessary to free the air-passages from pus, and from this cause was more than once in danger of suffocation. In the course of a week, however, the secretion of purulent matter began to diminish sensibly, and in a few days more ceased altogether, giving place to a slight discharge of thin fluid, which continued for some months.

The peculiar convulsive cough, which from the first had been a marked feature in the case, ceased altogether in a very short time after the operation, and there has never since been any return of it. From the time the cough ceased, the convalescence was very rapid, the patient gaining flesh and strength fast, having no drawbacks, save the occurrence twice of hæmoptysis, before stated.

There can be no doubt that the foreign bodies in the lung gave rise to all the symptoms, and that the patient had not only no constitutional disease, but that he is possessed of a wonderful amount of vitality and exceptional recuperative power. The wound remained open for nearly a year from its reception, and a small stick three-eighths of an inch in diameter could be readily thrust through the body without causing him much inconvenience, closing finally in June, 1864. In spite of all remonstrance, he insisted on joining his command, and took an active part in the battles of General Sheridan's campaign in the Shenandoah Valley, in the summer and autumn of 1864.

Precisely to what part of the skeleton the pieces of bone removed belonged, I regret to say, cannot be known, since they were, by a most unfortunate accident, destroyed. My own remembrance of their appearance, aided by that of my assistants, and the memory of the patient himself, can only record that they seemed, and we deemed them to be, portions of the ribs. The fragment easily lifted from beneath the clavicle was, as before stated, probably a portion of that bone; and the long, impacted piece which gave so much trouble, a portion of rib split off by the ball. There was also a transverse vertebral process.

Thus, from remembrance, and by an examination of the cicatrices, by exclusion, and by estimating probabilities, we may form a pretty good idea of what these portions of bone were, but, in the absence of certainty, the interest of the case must centre upon the patient himself, and upon the fact that not only has he recovered from so severe an injury, but that the recovery is so complete. He is now in robust health. Eight years since, when able to leave the house for the first time, he weighed (he tells me) "less than eighty pounds." His present weight is "*one hundred and sixty pounds*," and he has a powerful muscular development. He has a nearly perfect use of the arm of the wounded side, the only exception being a little embarrassment in motions of rotation, as in throwing a stone, for instance.

The most cursory examination of this patient now makes it evident that the ball in its path must have been in the closest proximity to most important structures in the clavicular region at its entrance, and to those of the vertebral column at its exit from the body. The distance, four inches from the walls of the chest, from which the fragments were removed, the downward direction of the sinus, and its clearly-demonstrated free communication with the bronchi, show to what an extent the upper lobe of the right lung must have been involved; and a paralysis more or less complete and persisting for more than six months, of the right arm, makes evident the narrow escape from destruction of the brachial plexus. The present condition of the lungs, as shown by physical signs, is believed to be as follows: The whole left lung

normal as far as can be determined. On the right side, anteriorly, above the clavicle, total or nearly total absence of respiratory murmur, flatness on percussion, caused by cicatricial induration. Below the clavicle the respiration seems normal, and there is no evidence of induration. Behind, the evidence of induration extends as low down as the lower border of the cicatrix, but the signs are more marked between the spinal column and the inner border of the scapula. Through the whole space, bounded above by the apex of the lung, outwardly by the inner margin of the scapula, below by the inferior border of the cicatrix, inwardly by the spinal column, there is dulness on percussion, respiration of a bronchial character, and increased vocal resonance. The same symptoms are found in the subscapular region, though not so well marked.

In addition to a rude diagram of the parietes of the chest, to illustrate the path pursued by the grape-shot at its exit, and a woodcut giving actual size of the shot itself, now in my possession, are appended illustrations of the present appearance of the patient's back and chest, from the original photographs. In estimating the accuracy of these representations, it should be remembered that the camera brings out most strongly the deep contracted portions of the cicatrices, and does not indicate well some of the others, and some do not show at all. For instance, in the front view, if one neglects to note the faint lines in the engraving to the inner side of the dark and depressed cavity shown, and which lines are really *cicatrices*, the impression would obtain that the whole extent of the injury in front was much nearer the acromion than it really is. Considering that this patient has rallied from almost the extreme degree of emaciation and asthenia compatible with life, until he now presents such a degree of health and muscular power as, conjoined with a character noted for courage and tenacity, would render him a formidable antagonist at most manly exercises and field-sports, I would present the case to the profession as an additional proof of what we may hope for from the exercise of the reparative and recuperative powers of Nature, provided the nutritive and excretory functions remain unimpaired.

IV.—*Case of Reflex Epilepsy in Disease of the Ear.* By Drs. Koeppe and Schwartze. (Arch. f. Ohrenh., v., 282. Cbl. Med. Wiss., June, 1871.)

Case.—*Idiocy. Chronic Suppuration of the Cavity of the Ear, with Perforation of the Tympanum, with Granulations. Cure of the Epilepsy by Combined Local and General Treatment.*—A boy fifteen years old was attacked at two years of age by a severe scarlet fever, with marked cerebral symptoms; a profuse, stinking, double otorrhœa ensued, for which he sought medical assistance eight years afterward. The difficulty of hearing was so great that the child for one and a half year was taught like the deaf and dumb. His speech was stuttering and obscure. After a protracted treatment, especially locally, of the ear, at the end of July, 1866, the suppuration had ceased on both sides. The boy was meanwhile sent to a celebrated deaf-and-dumb instructor. In spite of continued improvement of the ear, and careful instruction, the intellectual development remained extremely backward. The speech had become distinguishable. At the beginning of February, 1868, epileptic attacks were noticed, which at first occurred at night, then at irregular intervals in the day, and, finally, returned two or three times a day. No aura could be detected. Physical disorders soon appeared, attacks occurred of aimless, irregular agility, and, finally, passionate fits of anger. The physical development remained that of a child of six years. No deformity of the body nor of the skull was present. A severe pharyngitis and rhinitis set in, however, as well as the double-sided otorrhœa. The use of extr. belladonna, the sustaining of a hair-seton at the back of the neck, the treatment of the inflamed mucous membrane of nose and throat by means of Weber's nasal douche, and gargles, the local treatment of the returned granulations in the ear, and the desistance from all instruction, at first made the epileptic attacks less frequent, and after a few months caused their disappearance; and with them the excited general state. Up to the present (two years after), they have not returned.

Proceedings of Societies.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

Stated Meeting, September 4, 1871.

Dr. T. C. Finnell in the Chair.

The Secretary announced the absence, in Europe, of the President, Dr. Jacobi, and his regret at his inability to be present at the meeting.

A report from the Comitia Minora stated that certificates of membership had been granted to Drs. Edward W. McDonald, Allan M. Hamilton, Celestia A. Loring, George Bayles, Nathaniel R. Mosely, Francis V. White, Sarah A. Coon, and Edwin D. Ramsdell.

NOMINATIONS.

The following nominations, to be voted upon at the next meeting, October 2d, were now made.

For President: Drs. Abraham Jacobi, Austin Flint.

For Vice-President: Drs. Ellsworth Eliot, T. C. Finnell.

For Recording Secretary: Drs. A. E. M. Purdy, Alonzo Chadsey.

For Corresponding Secretary: Drs. B. S. Thompson, F. A. Castle.

For Treasurer: Drs. J. E. Janvrin, S. Caro.

For Censors: Drs. Stephen Rogers, John C. Peters, T. C. Finnell, W. M. Chamberlain, Charles S. Wood, C. C. Lee, Edward S. Dunster, Frank P. Foster, S. A. Raborg, S. Caro, David Magie.

For Delegates to the State Society, to serve for three years, to fill vacancies made by the appointment of Dr. T. A. Emmet a permanent member, and by the decease of Dr. J. J. Connolly: Drs. S. J. Clark, A. Chadsey, J. R. Leaming, S. A. Raborg, E. Peugnet, M. H. Henry, E. B. Warner, W. B. Neftel, C. A. Leale.

THE JACOBI PRIZE.

The Secretary announced that the Comitia Minora had adopted the following circular, and appointed as the Prize Committee the gentlemen therein designated:

PRIZE ESSAY ON DISEASES OF CHILDREN. *Open for Universal Competition.*—The President of the Medical Society of the County of New York, Dr. Abraham Jacobi, has placed in the hands of its Treasurer four hundred dollars ($400), to be awarded for the best essay on "*A History of the Diseases of Infancy and Childhood in the United States, and of their Pathology and Therapeutics.*"

Competitors will send their essays in English, with motto attached, and the name and address of the writer, with the same motto, in a sealed envelope, to the present Secretary of the Society, Dr. ALFRED E. M. PURDY, 123 *East Thirty-eighth Street, New York*, on or before January 1, 1873.

The Committee are authorized by the Society to withhold the prize if the essays submitted should not merit it.

AUSTIN FLINT, M. D.,
ERNST KRACKOWIZER, M. D.,
EDWARD S. DUNSTER, M. D.,
} *Committee.*

DECEASED MEMBERS.

The Secretary also announced the death, since the last meeting, of four members of the Society, viz., Dr. George Wilson, Dr. Cyrus Ramsay, Dr. Montross L. Smith, and Dr. J. J. Connolly.

On motion of Dr. Chadsey, the Chair appointed, as a committee to present suitable resolutions upon the subject at the next meeting, Drs. J. C. Smith, R. A. Barry, Truman Nichols, and S. J. Clark.

AMENDMENTS TO BY-LAWS.

Notice was given of several amendments to the By-Laws, to be submitted for adoption at the next meeting:

The first, second, and third of the proposed amendments provide for a new permanent Committee on Registration, in accordance with a resolution of the State Society, and define the duties of this committee: to prepare and keep on file, open to inspection, a list of the reputable physicians in the county of New York; and, as far as practicable, to prepare also a list of all reputable physicians and surgeons who have heretofore lived and practised within the present county limits.

The fourth and fifth amendments change the regular day of meeting of the Society from the first to the last Monday in the month.

The sixth makes the affirmative action of the Comitia Minora upon admission to membership, subject to the approval of the Society, by a two-thirds vote of the members present.

The Secretary read the names of delinquent delegates to the last meeting of the State Society.

The meeting then adjourned.

Anniversary Meeting, October 2, 1871.

Dr. Abraham Jacobi, President, in the Chair.

The President announced the admission to membership of Drs. William A. Ewing, Leopold Goldschmiedt, Gustavus Frauenstein, Lewis Conrad, Wolfgang Schmidt, Isidor Stachelberg, Henry R. Pratt, William Frothingham, and John C. Jay, Jr.

MINUTES OF COMITIA MINORA—AN INJUNCTION.

The next business in order was the reading, by the Secretary, of the minutes of the Comitia Minora for the past year. This was proceeded with through a part of the minutes, when it was announced that the reading of the remainder was prevented by a legal injunction, which had just been served, restraining the Comitia Minora from publishing in any manner that part of their proceedings relating to "charges against a member," or from making any report upon the same. Such an unlooked-for state of affairs seemed likely to provoke a warm discussion, but, at the request of the Chair, this was refrained from until the regular business could be disposed of.

TREASURER'S REPORT.

This was read by Dr. Janvrin, Treasurer since the death of Dr. Bibbins, showing a satisfactory balance on hand of $503.87. Accepted, and ordered on file.

ELECTION OF OFFICERS.

The balloting for officers resulted in the election of the following:

President, Dr. Abraham Jacobi;

Vice-President, Dr. Ellsworth Eliot;

Recording Secretary, Dr. Alfred E. M. Purdy;

Corresponding Secretary, Dr. Bradford S. Thompson;

Treasurer, Dr. Joseph E. Janvrin;

Censors, Drs. Wm. M. Chamberlain, Edward S. Dunster, Charles C. Lee, John C. Peters, and Stephen Rogers.

Delegates to State Society (for three years, to fill vacancies), Drs. J. R. Leaming and E. B. Warner.

Prior to the balloting, Drs. Flint, Finnell, and Chadsey, withdrew their names as candidates, respectively, for the offices of President, Vice-President, and Recording Secretary. On the first vote for Censors, Dr. Frank P. Foster, who had been regularly nominated at the last meeting, was one of the number elected, when it was discovered that he was not a member of the Society.

CONCERNING APPEALS TO LAW.

Dr. Stephen Rogers introduced the following preamble and resolutions, and moved their adoption:

Whereas, Paragraph ii., Section 1, of Chapter 445 of the Laws of the State of New York, entitled "*An Act to regulate the County Medical Societies of the State of New York*," declares that "each county medical society shall have full power and authority to enforce discipline among its members, and obedience to its rules and regulations, with power to expel or otherwise discipline, as they may deem most advisable for the best interests of said society" (*see* Transactions of State Society, 1869, p. 63); and—

Whereas, The Medical Society of the County of New York has, by its regulations, referred all questions of ethics and discipline to the Comitia Minora, with power to conduct their proceedings in such a manner as they may deem expedient, and as may be in accordance with its By-laws (*see* By-Laws, Chap. ix., Art. 6);

Resolved, That if any member of this Society, against whom charges are brought, in the form required by the Comi-

tia Minora, or any member who shall have thus preferred charges, shall refuse to obey all requests of the Comitia Minora pertaining to the investigation of such charges, or shall not present the Comitia Minora an acceptable excuse for a failure to obey such requests, such member is guilty of an offence against this Society which renders him or her liable to expulsion; and further, if it appear that any member, so charged or bringing charges, has resorted, or is about to resort, to courts of law, instead of abiding by the rules and orders of this Society and its Comitia Minora, that act, or that contemplated act, shall be regarded by this Society as that of one no longer a member of it; and the name of such person shall be, without further proceedings, stricken from the official list of members of this Society.

Dr. B. I. Raphael wished more light upon the facts which had called forth the resolution before he could vote upon it intelligently.

Dr. Marion Sims considered that the Society had full power summarily to expel a member disagreeable to it from whatever cause, but thought its proper course was to await the decision of the court at the hearing of the injunction, before taking any action, direct or indirect, upon the case in question.

After some further discussion, the resolution was laid upon the table.

AMENDMENTS TO BY-LAWS—A COMMITTEE WITH NO DUTIES.

The first of the amendments proposed at the last meeting, that establishing a permanent Committee on Registration, was adopted, as follows:

Chap. X., *Art.* 1, to read: "The following permanent committees shall be appointed by the President as soon after his election as may be, viz.: the Library Committee, Committee on Intelligence, Meteorological Committee, Committee on Diseases, Committee on Registration, and a Finance Committee."

The next amendment was:

Chap. X., *Art.* 11.—"The Committee on Registration shall prepare a list of all practitioners of medicine and surgery in the county of New York who, having received a diploma from any medical college or institution recognized by the American Medical Association or by the Medical Society

of the State of New York, conform to the codes of ethics of these societies. Said list shall include the name of the college or institution from which the respective persons named received their diplomas or licenses, the date of the same, and the residence of the person; and said list may be examined by any member of this Society. Any person whose name the Committee on Registration may find reason for excluding from such list may appeal from their decision to the Comitia Minora and to the Society at its anniversary meeting. Though not obligatory, it is deemed very desirable that the Committee also prepare a list, as nearly correct as practicable, of the names, period of residence, date of and age at death, of all the reputable physicians and surgeons who have lived and practised their professions in the territory now known as New York County, including such other details as they may think proper."

Dr. F. Elliot thought the proposed article should be entitled "A by-law to provide for the summary disciplining of members without the necessary action of the Society." For it practically gave the responsibility of decreeing and administering the second of the three grades of punishment in the power of the Society—reprimand, suspension, and expulsion—to a committee not elected by the Society, but appointed by its President. If a member's name were dropped from the list, it was equivalent to publicly accusing him, either of having no recognized diploma, or of having violated the code of ethics; and to virtually suspending him, it might be for a year, he having no appeal to the Society until its next anniversary meeting. And, meanwhile, no member whose name was borne on the list could consult with him without subjecting himself to the charge of quackery. Moreover, it was not stated in what manner the Committee should perform its duties—what opportunity should be given a doomed or suspected practitioner for vindicating himself before having his name stricken from the roll. If the Society proposed to delegate its authority of discipline to such a committee, it ought certainly to provide the proper working machinery.

Such a plan of discipline as this amendment would establish, if not in direct violation of the letter of the Society's constitution (which the speaker had been unable to examine carefully), was surely in opposition to its spirit. By existing rules, all charges against a member were made, not publicly, but secretly, and referred to the Comitia Minora, an elective body, for investigation. If the member was here acquitted, neither

the charges, nor even the fact that charges had been made against him, ever saw the light. But, in the event of conviction by the Comitia Minora, its proceedings must be reported to the Society for the final decision. Now it was proposed to give a less responsible body, an appointed committee, the power to spring a trap on a man—punish him first, and hear him afterward, if he should choose to appeal.

Again, the amount of earnest, self-sacrificing labor required to effect a thorough registration, was doubtless little realized by those who had no practical experience in the matter. This work had, for some years past, been in the hands of a society numbering at least twenty efficient members; and some of these, now present, could testify to the time and trouble it involved. It was almost idle to hope that any committee which might be appointed, beginning the work *de novo*, as it ought, could finish it satisfactorily in a single year. But the next year a new committee would be assigned the task, and have to begin it over again. The Registration Committee, to inspire the necessary confidence, must be composed of men widely and favorably known to the profession and the public; they must be men of such ability and attainments as to command eminence. Would it be possible to find enough such men who could be induced to spare the requisite time from their already pressing engagements? If the County Society wished to take into its own hands the burden and the responsibility of preparing the register, the members of the Medico-Historical Society would only too gladly resign them; but, in the speaker's opinion, the County Society was not ready to take this step.

As an amendment to the amendment, he moved such omissions and interpolations as to make the article read:

The Committee on Registration shall prepare a list, as nearly correct as practicable, of the names, periods of residence, dates of diplomas or licenses, and institutions from which these were received, dates of and ages at death of all reputable physicians and surgeons, deceased, who have lived and practised their profession in the territory now known as New York County, including also official titles held by them at their decease, and such other details as the Committee may think proper.

Dr. O. White, in seconding the motion, said that the article, as originally proposed, was certainly contrary to the existing By-Laws of the Society.

Dr. Ellsworth Eliot explained that the article had been presented in accordance with the recommendation of the President of the State Society at its last meeting. He was confident men of the right stamp could be found to serve on the Registration Committee, and was opposed to making it only a committee on dead men.

Dr. F. Elliot said that the recommendation referred to contemplated chiefly the rural counties, where there was no existing registration, and where it was expected that every reputable practitioner would be a member of the county society. In New York and the adjacent cities we had already an efficient registration, and the membership of the Medical Society of the County of New York probably did not include even a majority of the respectable physicians practising within the county limits. Furthermore, the State Society could hardly have intended that, in any case, a county society should delegate its power of discipline to its Registration Committee.

Pending the consideration of Dr. Elliot's amendment, the whole subject was, on motion of Dr. Raborg, laid on the table.

CHANGE OF MEETING-DAY.

The next of the proposed amendments was the substitution of "last Monday" for "first Monday" in Chap. XI., Arts. 1 and 2. It was amended by changing "last" to "fourth" in both cases, and by substituting "annual" for "anniversary" in Art. 1; and was then adopted. This makes the annual meeting fall on the *fourth* Monday of October, and the stated meetings on the *fourth* Monday of every other month, except July and August.

WOMEN AND GRAMMAR.

The last proposition of amendment was to change Chap. XIV., Art. 1, so as to conclude: "They shall grant him a certificate of membership, subject to the approval of the Society." It was moved to amend this by inserting, after "him," the words "or her." The explanation was made that women were already members of the Society, which, by its action in admitting them, had practically interpreted the masculine

pronoun, wherever occurring, as including both sexes. A division of the house being called for, the words "or her" were declared inserted by a vote of fifty-five to nineteen. The main question was then carried.

Dr. Chadsey now moved a reconsideration of the vote whereby the first amendment was passed, providing for the Committee on Registration, since the subsequent action of the meeting had left that committee with no duties. The motion was lost.

Dr. Rogers's resolution again.

On motion of Dr. M. H. Henry, the preamble and resolution presented by Dr. Rogers were taken from the table and re-read.

Dr. Henry: It seems to me, Mr. President, that if the members had understood the occasion and the purport of that preamble and of that resolution, they would never have voted to lay them on the table; and for their enlightenment I will tell them the facts that I happen to know—that recently a member of this Society preferred charges, in proper form, against another member, Dr. Ruppaner—

The President called the speaker to order, and requested him to mention no names.

Dr. Henry: I have to say, then, that this member against whom the charges were preferred (whose name I am not permitted to mention) did go before Judge Barnard, and obtain from him an injunction against the members of the Comitia Minora, and each of them, and against Dr. Sayre in particular. Now, I am advised by a distinguished lawyer that this injunction is only of force as against the Comitia Minora and the last-named gentleman; and that it is perfectly competent for us, as a society, and for any member not specially enjoined, to discuss the whole matter.

The President: Then I, as a member of the Comitia Minora, must retire from the chair.

On motion, the meeting now resolved itself into Committee of the Whole, Dr. John O. Stone in the chair, and Dr. Bradley, Secretary.

Dr. Henry, taking the floor, obtained a copy of the order of injunction, which he read, as follows:

Supreme Court, City and County of New York. Injunction by Order. —Anthony Ruppaner, plaintiff, against Austin Flint, Alfred E. M. Purdy, William Thompson, Ellsworth Eliot, Thomas C. Finnell, John C. Peters, Abraham Jacobi, Stephen Rogers, Joseph A. Janvrin, and Lewis A. Sayre, defendants.

It appearing satisfactorily to me, by the affidavit, as well as the complaint, of the plaintiff, that sufficient grounds for an order of injunction exist: I do hereby order and enjoin that the defendants, Austin Flint, Alfred E. M. Purdy William Thompson, Ellsworth Eliot, Thomas C. Finnell, John C. Peters, Abraham Jacobi, Stephen Rogers, Joseph A. Janvrin, and Lewis A. Sayre, and each of them, and their agents and attorneys, refrain from proceeding against the plaintiff in the charges, or so-called charges, of the defendant, Lewis A. Sayre; and from assuming to offer, or to receive, any statements, documents, or evidence in support thereof; and from presenting or hearing the accusations mentioned in the complaint herein; and from making or procuring any report or decision therein; and from publishing or communicating any proceedings therein, which have been hitherto taken, or any statements, papers, or evidence that may have been offered or received in support of such so-called charges; and from doing or permitting any other act or thing in aid or furtherance of the proceedings aforesaid.

And it is further ordered that the defendants show cause before me on the 10th day of October, 1871, at 12 o'clock, noon, on that day, or as soon thereafter as counsel can be heard, why this order should not continue in force and be made perpetual, until the further order of this Court; and, in case of disobedience to this order, you will be liable to the punishment therefor prescribed by law.

Dated New York, *September* 30, 1871.

(Signed) George G. Barnard, J. S. C.

Resuming his remarks, Dr. Henry characterized the obtaining of the injunction as the act of a man evidently conscious of guilt, and seeking by this means to prevent any fair hearing of his case. It was in violation of every principle governing the conduct of a gentleman toward his professional brethren. Such an attempt to gag the Comitia Minora of the Society, and to interfere with the regular course of investigation and discipline of the Society itself, should be properly resented; and the speaker knew no better way than the passage of the pending resolution, to show both the member who had thus placed himself beyond the pale of professional recognition, and the judge who had aided him, what was thought of their

action by a society chartered half a century before Judge Barnard ever dreamed of entering the law. There was no injunction against the Society's thus expressing its opinion.

The Chairman said that, so long as the injunction was legally in force, it was only decorous for the whole Society to act in accordance with it. He was in favor of obeying the law.

Dr. Noyes could not fail to sympathize with the spirit of the last speaker but one; for the course of the member in question was such as no honorable man, feeling himself in the society of his peers, could think of pursuing. But, with regard to practical action, he must agree with the Chairman. The subject had now been pretty thoroughly ventilated, and the man chiefly concerned had certainly not improved his standing in the estimation either of the Society or of the community. There was no necessity for any hasty or ill-considered action, unbecoming the dignity of the Society. The case would come before the Court, for a hearing, in a few days, and, after the decision was known, it would be time enough to act. He moved, therefore, that the committee rise and report that, in its judgment, the resolutions should not pass.

Dr. Henry seconded Dr. Noyes's motion, saying that he recognized the force of his remarks, and that he had himself accomplished his purpose—to ventilate the matter. The motion prevailed.

The Committee of the Whole now rose; and, in accordance with its report, the Society negatived the resolutions.

Adjourned, to meet at the call of the President.

NEW YORK ACADEMY OF MEDICINE.

At a meeting held on the 21st of September, 1871, the following preamble and resolutions were unanimously adopted:

Whereas, In charging the grand jury on September 6th (inst.), Judge Gunning S. Bedford said: "Of late we have been living in an atmosphere of abortion. The very air is indeed heavy with the dark deeds of these heartless and unscrupulous specimens of human depravity, professional abortionists. Let the warning word this day go forth, and may it be scattered broadcast through the land, that from this hour the authorities, one

and all, are to put forth every effort, and strain every nerve, until these traffickers in human life be exterminated, and driven from existence, by fully vindicating the majesty of the law in all of these cases of its fiendish violation. Let me express the earnest hope—shared in, as I feel confident it will be, by you and by all right-minded citizens—that the Legislature at its next session will amend the statute-book, so that instead of reading, 'any person who shall administer to any woman with child, or prescribe for any such woman, or advise or procure her to take any medicine, drug, substance, or thing whatever, or shall use or employ any instrument or other means whatever, with intent thereby to procure the miscarriage of any such woman, unless the same shall have been necessary to preserve her life, shall, in case of the death of such child or of such woman, thereby produced, be deemed guilty of manslaughter in the second degree,' it may read, '*shall be deemed guilty of murder in the first degree.*' Then the punishment would be death. Now, the crime being simply manslaughter in the second degree, the punishment is only imprisonment, not exceeding seven years:"

Resolved, That, in the opinion of the New York Academy of Medicine, the author of that language has, by so public a declaration of his sentiments, his intentions, and his hopes, given us reason for renewed expression of highest commendation, has vindicated the already-widely expressed support from the medical profession of the country, of the course he has hitherto pursued, and has, we trust, greatly strengthened the esteem and confidence in which he is held by the public.

Resolved, That this Academy, in the discharge of the duty its professed objects command—to promote public health and public morals—pledges all its influence and efforts, in support of any legislative or other measures which our law-officers may propose, as offering a reasonable promise of mitigating, if not of removing, the pestilence of criminal abortion which is upon our country.

Resolved, That, to remove all doubt from the public mind, in regard to the position of the New York Academy of Medicine in this important matter, to secure the influence upon the State authorities desired by this expression, and to stimulate the medical profession generally to similar acts, a copy of this preamble and these resolutions be forwarded to Judge Bedford, to District-Attorney Garvin, and to the New York Bar Association; that the leading daily papers of this city, and its medical journals, be furnished with the same; and that the secular and medical papers and journals throughout the country be requested to copy.

Bibliographical and Literary Notes.

ART. I.—*Hand-book of Skin Diseases.* By Dr. ISIDOR NEUMANN, Docens an der k. k. Universität in Wien. Translated from the second German edition, with Notes, by LUCIUS D. BULKLEY, A. M., M. D., etc., pp. x.–467. New York: D. Appleton & Co., 1872.

THE extraordinary activity with which the study of dermatology is now being followed, both in Europe and in America, cannot fail to produce two very desirable results, viz., more correct knowledge and practice in this department of medicine, on the one hand, and on the other hand, from the comparative ease with which diseased processes may be observed in the skin, a nearer approach to a demonstration of the true nature of inflammation—a process which lies at the bottom of so many of the multiform diseases of the tegumentary structure, and which has for so many ages proved the stumbling-block of pathologists. Although the German school of dermatologists, led by Hebra, may not yet have made its full impress upon therapeutics, its influence in that direction has been very powerful, and seems constantly gaining ground. Indubitably that school has revolutionized dermatic pathology, which must form the corner-stone of the foundation upon which shall be erected whatever system of therapeutics is finally to obtain general assent. At least, this is true of textural alterations, whatever may be the ultimate doctrines in regard to diathesis.

Hebra's great work is, of course, well known to professed dermatologists, but it is still almost inaccessible to the great mass of practitioners in America and Great Britain. Dr. Neumann was for many years Hebra's assistant, and is still studying in the same field. His book may be considered a fair epitome of German views, together with much that is the result of his own investigations. From its compact arrangement it is well adapted as a hand-book. In its original form it is, however, almost exclusively devoted to pathology, so that, as a text-book for the student and general practitioner, it had need to be supplemented in the matter of therapeutics. In doing this, Dr. Bulkley has chosen to present, in a running commentary,

the views of various writers, rather than to lay down therapeutical precepts of his own. Hence, his edition of Neumann is, as correctly described by himself, a *compendium*. Still, the author's text will claim our chief attention, rather than the added matter.

The first ten pages of the book are devoted to a very readable historical introduction, comprising a chronological and ethnical enumeration of the principal writers on the structure, functions, and diseases of the skin, with a brief synopsis of the leading peculiarities of doctrine which have had their day. A narrative of this sort is interesting, not only as forming a part of the history of our art, but as shedding some light on the origin of systems of classification and nomenclature, and of special names of diseases.

Under the head of *General Considerations*, some thirty pages, with the running title *anatomy*, are taken up with a consideration of the structure of the skin, of the various sorts of lesions (forms of disease), and of the general outlines of diagnosis. The anatomy of the integument is treated of in short descriptions of the *corium*, or *derma*, the *epidermis*, with its *rete Malpighii*, *pigment*, *adipose tissue*, *nerves*, *blood-vessels*, *lymphatics*, *sebaceous glands*, *sudoriparous glands*, *hairs*, the *cutaneous muscles* (arrectores pili), and the *nails*. These descriptive paragraphs are illustrated by drawings of microscopic sections, and supplemented by full quotations of the observations of recent investigators upon special points of structure—notably Langerhaus, Podcopaën, Tomsa, Michelson, and Türk, upon the cutaneous nerves, and Götte upon the development of the hairs. The primary and secondary lesions of skin-diseases are briefly described, and their mode of formation sketched.

A few general remarks on the examination of patients suffering from skin-disease lead to an exposition of the particular significance of the individual lesions. These are short and eminently practical.

In the section upon etiology, the systemic derangements which may give rise to skin-disease are made subordinate in importance to external causes. There can be no doubt that the French school of dermatology has given undue prominence

to certain real or imaginary diathetic conditions—herpetism, for example—in the causation of skin-disease. Dr. Neumann, we think, errs in the contrary direction; but in this he does not stand alone, his opinions being those generally held in Germany. To our mind, the English physicians, best represented by Dr. Tilbury Fox, have most accurately estimated the relative importance of diatheses and external agents in the causation of skin-disease, and have thereby been able to construct a system of therapeutics which, while it is doubtless very largely eclectic, will, we think, best serve the needs of actual practice. We must, however, assent to the following remarks of Dr. Neumann (p. 54):

"It may be remarked that it was formerly customary to consider certain dyscrasiæ, especially scrofula and rachitis, as the most frequent causes of skin-diseases in children, and that care was taken not to remove eruptions by local means, because it was thought that a salutary source of excretion would thus be dried up, and disease of some internal organ would be sure to follow. If, however, we inquire into the proportion of brain-diseases, for instance, and compare them with the diseases of the skin in children, the proportion is far too small; whereas now, when skin-diseases are treated locally, the proportion of diseases of the brain should have greatly increased, which no physician familiar with the subject will assent to."

After a couple of pages devoted to the *course* of skin-diseases, with the modifications which the tegumentary structure impresses upon the inflammatory process, we come to a very meagre outline of the therapeutics of skin-diseases, comprised in little more than a page, and of which the key-note is to be found in the statement, "*we place by far the greatest value upon external treatment.*"

The vexed subject of a classification of skin-diseases our author judiciously makes the last of his *prolegomena*, thus aiding, by general outlines previously inculcated, the student's appreciation of various principles of classification. After enumerating, with greater or less detail, the different classifications of Mercurialis, Torry, Willan, the "natural" system of Alibert, the systems of Erasmus Wilson, Chansit, Bazin, Hardy, Bärensprung, the "natural" system of Buchanan, and

the pathologico-anatomical system of Hebra, which last is given *in extenso*, Dr. Neumann presents his own classification, which, he says, "may be considered essentially a simplification of that of Hebra, with the omission of certain classes, and the association of some groups." This classification embraces the following classes: 1. *Anomalies of Secretion;* 2. *Inflammation;* 3. *Hæmorrhages;* 4. *Hypertrophies;* 5. *Atrophies;* 6. *New Formations;* 7. *Anomalies of Pigmentation;* 8. *Neuroses;* 9. *Parasites.*

It is generally conceded that dermatic pathology, like most other branches of the science, is not yet sufficiently advanced to allow of an unobjectionable nomenclature—unobjectionable, that is, to those who derive satisfaction from contemplating a fabric or structure beautiful in itself, without regard to the practical purposes it is designed to serve. For our own part, we do not regard this fact as particularly unfortunate, and are not disposed to find fault with any classification of skin-diseases which does not throw actual impediments in the student's path. Dr. Neumann's system is measurably free from these, and, although almost every one of his classes, to say nothing of subdivisions, is open to criticism, we refrain from any expression of dissent, except to suggest that the term *anomaly* is as much out of place in pathology as is *os innominatum* in anatomy.

Our author enters upon the consideration of *special diseases* of the skin at page 69 of the volume. Under the head of *Anomalies of the Perspiratory Secretion*, we find a consideration of *anhydrosis*, *hyperhydrosis*, *chromhydrosis*, *and hæmathydrosis*, in which these interesting derangements o the perspiratory function are treated of in a rather fragmentary manner. It is to be regretted that their connection with disordered nervous action, especially as due to trumatic causes, has not received more attention from the author.

A sketchy account of the general characters of inflammation introduces us to a description of the exanthematous fevers. Varicella is considered by Dr. Neumann, as by most German writers, to be a modified form of small-pox, and the opposition very generally entertained to this view is noticed only in a short foot-note in which Thomas's views, which by

no means cover the whole ground, are quoted. It is proper to add that the translator gives a very fair summary of the arguments bearing upon the point. The treatment of small-pox is as fully considered as we should expect to find in a work on diseases of the skin. The author agrees with Hebra that nothing in the way of treatment can prevent pitting. Scarlet fever is treated clinically at considerable length, but the consideration of its therapeutics is meagre. The author puts no confidence in belladonna as a prophylactic, and, in mentioning it merely as "in great repute among the homœopathists," scarcely does justice either to the drug or to those observers who have very strongly expressed a confidence in its powers. We should expect to find in Dr. Neumann's book an account of the "German measles," or *rötheln*, but, unless it be included in the very scant section on roseola, of which there is no internal evidence, it has been omitted.

Concerning the pathology of erysipelas, the author gives the following synopsis of Billroth's views (p. 140): "Erysipelas proceeds most frequently from wounds on the lower extremities, the face, etc. It takes its origin, therefore, always from one place, from which the general symptoms follow, while other similar diseases, as measles and scarlet fever, appear equally diffused over the whole surface. There is no such thing as a spontaneous erysipelas capitis, but only an erysipelas traumaticum, phlogisticum and septicum, in the broadest sense of the word; there must, therefore, be some irritating matter with phlogistic properties circulating in the skin, which continues until it meets with obstacles, or until the poison is itself destroyed; the poison at the same time producing pyrexia," etc. The supposed connection of repeated attacks of erysipelas with organic disease of the kidneys is not mentioned by our author. The local treatment is considered to be by far the most important, from which opinion we must decidedly dissent.

There are certain herpetic affections, for instance, the so-called *herpes epizoöticus contagiosus*, and herpetic affections of the mucous membranes, which might profitably have been considered under the head of herpes, but which we do not find mentioned. The connection of herpes with disorders of the

nervous system is not broadly handled, the most satisfactory reference to the matter being a short quotation from Bärensprung (p. 155).

The author devotes only ten pages to the subject of eczema. He supports the view that it makes its appearance usually by an eruption of vesicles. The anatomical characters of the disease are well described. The notion of the peril of curing it by local treatment in children is most properly combated. The treatment of the affection is very fully given, but we find no mention of that most soothing application, hot water, in acute cases. We should hesitate to adopt our author's suggestion to treat eczema of the meatus auditorius by the application of sponge or laminaria tents smeared with ointment. The translator appends a long and very well-constructed note on the various views held on the pathology of eczema, and on the treatment of the disease, in which he cites cases showing the harm that sometimes results in the indiscriminate use of irritating external treatment.

For an account of pemphigus we have to consult two different portions of the work, as it is treated under its own name at p. 190, and again, at p. 350, as *syphilis cutanea bullosa*, which latter our author does not, however, consider to be a true pemphigus. Indeed, he denies that syphilis is a cause of pemphigus, and, as usual, pays too little attention to diathetic conditions of any sort in the causation of the disease. In this regard the translator very properly differs from his author. Contrary to the opinion of Willan, Bateman, and Hebra, Neumann admits an acute pemphigus.

Sycosis, also, is considered in two different portions of the book, the author making two varieties—the parasitic and the non-parasitic. It seems evident that this distinction is well founded, and that sycosis parasitaria, which with us is the rule, is with the Germans the exception.

We are very glad to see that, in his sections on impetigo and ecthyma, Dr. Neumann discards the old and practically meaningless words *achor*, *phlyzacia*, *psydracia*, etc. He refers to Fox's description of a *contagious impetigo*, but has not himself seen reason to regard the disease as ever truly contagious. Dr Bulkley describes cases which have come under

his observation, which, however, differ in many features from those that we have met with. Perhaps the disagreement between Fox and Neumann may be in the future made less by an abandonment by the former of the name which he has, possibly with some haste, applied to his cases. That Fox's cases bear the stamp of correct observation, seems unquestionable.

Psoriasis, again, is ranged under the squamous inflammations, and also among the syphilodermata. The anatomy of the disease is very fully given, and its treatment is satisfactorily considered. The lichen of Neumann is, as remarked by the translator, a different affection from that known under the same name to English and American observers, and requiring a far different treatment.

Under the head of dermatitis venenata, which is dismissed with three lines and a foot-note, we look in vain for any reference to the dermatitis toxica of Wilson. Burns are treated of under the somewhat high-sounding name of dermatitis calorica, and not in a very satisfactory manner. Their immense surgical, in comparison with their dermatological, importance should have warned the author to omit them altogether, or else disarm criticism by confining his account strictly to a mere description of the diseased processes in the skin induced by heat. Since, however, he has chosen to enter upon the broad aspect of the subject, we must wonder that he neglects the matter of cicatricial contractions.

The generic term *purpura* is made to do more than its usual amount of duty, even including, under the head of *purpura traumatica*, hæmorrhages resulting from injury.

To the very interesting subject of scleroderma, Dr. Neumann contributes the histories of two cases which have come under his own observation. He adds nothing to our previous knowledge of the therapeutics of the disease, and does not give a satisfactory account of recognized methods of treatment. His description of its anatomy is, however, well worthy of perusal.

We now come to a section of the work which merits our unqualified admiration. We refer to the author's description of senile degenerative changes in the skin and its appendages,

largely founded upon his own investigations. Twelve pages are devoted to this subject, mostly to microscopical changes, well illustrated by drawings. In regard to those curious cases in which the hair has been known to lose its color suddenly, our author says: "In what manner the hair suddenly becomes gray must, for the present, remain undetermined. Without doubt, air enters the hair (Landois); how it arrives there we cannot tell. In black hairs which I submitted to a pressure of thirty atmospheres under an air-pump for several months, I was unable, on careful microscopic examination, to perceive any air within them, or any change in their color. Nor could I discover any alteration of hue in the quills of a porcupine, into whose interior I forced air. Moreover, in the hairs of some animals, especially rabbits, we find the medullary canal partly filled with air and partly with medullary cells, without the hair appearing otherwise than of one color."

Neumann agrees with most observers in considering alopecia areata as not of parasitic origin. In our opinion, he throws undeserved ridicule upon Rindfleisch's views of its pathology and upon his plan of treatment. Dr. Bulkley remarks: "I have seen the hair thin out and become very brittle and lustreless from curling, or from the modern practice of crimping the hair. Treatment is of no avail while the habit is persisted in."

Lupus is a bright example of the success of the German system of therapeutics. Our author properly insists on the paramount importance of local treatment in this disease. The galvano-cautery is spoken of in terms of high, but deserved, praise. "One application," says Neumann, "destroys about as much as twenty applications of nitrate of silver." The differential diagnosis from rodent ulcer is not mentioned. In 1863, Dr. Neumann published the results of microscopical investigations of lupus erythematosus, taking precedence of other observers, and insisting on the clinical fact that the disease took its origin from the sebaceous glands and hair-follicles. These observations were, as Dr. Neumann observes, afterward confirmed by Dr. Geddings.

The syphilodermata (which word we like much better than syphilides) take up about fifteen pages, a considerable portion

of which space is, however, devoted to the general history of syphilis and to the consideration of non-dermatic lesions. The author rather overrates Waller's experiments in adducing them as proof that "all secretions and tissues may be the bearers of secondary syphilis" from one person to another. We are well aware how much has been done in Germany to unsettle our fond trust in the dualistic theory, but we can scarcely agree with our author that it has been "overthrown" (p. 347). His description of syphilitic lesions of the nails is very short and unsatisfactory. He has not been able to perceive any advantages from the use of mercury hypodermically in syphilis. He speaks very favorably, and we think with good reason, of the beneficial effects of Zittmann's decoction, especially in long-standing cases, with cachexia. The "mixed treatment" is mentioned only by the translator, who might with propriety have referred to the mixture of the ready-formed biniodide of mercury with iodide of potassium, preferred by several American physicians.

We should have been gratified to find, in the section on elephantiasis Græcorum, a fuller reference to the labors of Boeck, of Christiania, and also to have presented a consideration of the question of the contagiousness of the disease. The translator adds detailed accounts of two cases.

Under the head of hyperæsthesiæ the various causes of pruritus are enumerated, that from the use of opium, as well as the connection between pruritis vulvæ and diabetes, being omitted.

For the benefit of those of our readers who may not have obtained a knowledge of the German treatment of scabies, we make the following quotation: "When about to treat a patient with scabies, in our choice of remedies we must consider the following: 1. Are we to treat a child or an adult? 2. A male or female? 3. Are there many or few secondary effects present, as pustules, etc.? 4. Is the patient to be treated in the hospital or at home? . . . Among the great mass of remedies used in scabies, those are the best which not only destroy the acari and their eggs, but at the same time cause the secondary eruptions to disappear. In scabies occurring in children, we use: ℞. Sulph. flor. ʒj; ung. simpl. ℥j, M.; or, ℞.

Sulph. flor., balsam Peruv., āā, ʒ ij; ung. simpl. ℥ ij, M. ℞. Styracis liquid., flor. sulph., cret. alb., āā, ℥ ss; sapon. virid., axung. porci, āā, ℥ j, M. S. for two frictions (Dr. Weinberg's ointment). This is especially suited for the out-door treatment of adults. The surface of the body should be well rubbed with the ointment morning and evening for three days, and, when many furrows are present on the hands, they must be bandaged with it, or gloves worn. If many secondary eruptions exist, the following salve should be applied four times within forty-eight hours: ℞. Ol. fagi (or ol. rusci), flor. sulph., āā, ℥ ss; saponis virid., ung. simpl., āā, ℥ j, M. A bath should not be taken before the sixth day. It is well to envelop children in woollen garments in immediate contact with the skin.

"Scabies of adult men (women have, as a rule, too tender a skin) are treated in Hebra's wards with the following remedies: ℞. Sulph. venal. ℔ij; calcis viv. ℔j; aq. font. ℔xx; coque ad [*sic*] remanent, ℔xij, dein filtra. This fluid is useful in scabies with few pustules and crusts; the patients first rub the skin well with ordinary soap in a bath; they then rub the most commonly frequented parts especially with the solution, while on the rest of the body it is simply applied without friction: the applications must not be too severe, or the corium will be laid bare. Two such applications of Vlemingkx's solution will suffice to cure the itch. If, however, there is much secondary eruption, Wilkinson's salve, as modified by Hebra, is better suited: ℞. Flor. sulph., ol. fagi, āā, ℥ vj; cret. alb., ℥ iv; sapon. virid., axung. porci, āā, ℔j, M., ft. ungt. The patients are rubbed with this ointment four times within forty-eight hours; meanwhile they lie between woollen blankets or wear a woollen suit next the skin, or are dusted with starch (Wertheim), and treated as out-door patients. The salve dries and comes off in large scales. A bath should not be taken sooner than a week. The ointment of Bourguignon can be recommended to those in better condition of life: ℞. Ol. lavand., ol. menth., ol. caryophyll., ol. cinnamom., āā, ♏ xx; gum. tragacanth., ʒ j; potass. carb. ℥ j; flor. sulph. ℥ iij; glycerinæ, ℥ vj. M."

Nearly forty pages are devoted to the vegetable parasites and the diseases with which they are found associated. The

descriptions of the parasites are minute and excellent, and well illustrated with drawings. The student may obtain from Dr. Neumann some insight into the methods of culture of these dermatophytes. It is to be regretted that the treatment of the vegetable parasitic diseases has not been presented with greater fulness. The author concedes the frequent parasitic nature of eczema marginatum, but thinks that the parasite may be consecutive to an intertrigo, herpes tonsurans, or a pityriasis versicolor; that, in the early stage of the disease, the fungus is almost always demonstrable, while in inveterate cases it is absent, as a rule. The propriety of Dr. Bulkley's caution, in regard to the use of a strong solution of corrosive chloride of mercury as a local application in cases of tinea favosa, will be apparent by reference to a recent case in which fatal mercurial poisoning followed the employment of this treatment (*see Lancet*, September 16, 1871, p. 413).

We have thus passed briefly in review certain points which struck us as calling for criticism; but the work, as a whole, claims great praise. It offers to the English-speaking student a synopsis of what the Germans have accomplished in dermatology, which is scarcely accessible in any other form. It is notably rich in the pathological anatomy of skin-diseases, and so cannot fail to give wide currency to the basis of a correct pathology. The descriptions of the microscopical features of disease are, in the main, excellent, but quite the reverse is true of the clinical features. Dr. Neumann's style of writing is terse and vigorous. We beg, however, to correct his Latin in one particular, viz., the expression *stadium prodromorum*, which occurs three times in the article on measles, and several times in other parts of the book.

The translator has done his work well, rendering his author's meaning in general very exactly. In addition to the running notes, Dr. Bulkley has added several appendices. These consist of a practical note on *vaccination*, by Dr. Frank P. Foster, in which the every-day aspect of this most important subject is treated in a condensed style; a note on the *vegetable nature of parasites;* one on the *inter-relations of the microscopic fungi;* one on *kerion;* and, lastly, a copious list of authors and works referred to in the volume. The table

of contents is supplemented by a very complete index. The mechanical appearance of the book is admirable. The illustrations have been faithfully copied by photography, and are well printed.

ART. II.—*The Functions and Disorders of the Reproductive Organs in Childhood, Youth, Adult Age, and Advanced Life, considered in their Physiological, Social, and Moral Relations.* By WILLIAM ACTON, M. R. C. S., Fellow of the Royal Medical and Chirurgical Society, etc., etc. Third American, from the fifth London edition. Philadelphia: Lindsay & Blakiston, 1871.

THIS standard work is well and widely known among the profession, and we take pleasure in again commending its many excellences. The author has made the best possible use of such additional material as he found at his disposal for the last edition, and has succeeded in treating a very delicate subject in a manner uniformly dignified and professional.

ART. III.—*Essentials of the Principles and Practice of Medicine. A Hand-book for Students and Practitioners.* By HENRY HARTSHORN, A. M., M. D., Professor of Hygiene in the University of Pennsylvania, etc., etc. Third edition, thoroughly revised. Philadelphia: Henry C. Lea, 1871.

WE have already noticed the previous editions of this work so fully that it need only be said, in regard to the third edition, that the additions will be found chiefly in connection with the topics of tuberculosis, relapsing fever, carbolic acid, and hydrate of chloral. In many particulars, however, we notice careful alterations and corrections, rendered necessary by recent advances in medical science. Certainly very few volumes contain so much precise information within so small a compass.

William Wood & Co. have in preparation: Lectures on the Palsies and Kindred Disorders of the Nervous System. By Meredith Clymer, M. D. Illustrated. A Treatise on the Theory and Practice of Obstetrics. A new, rewritten edition. By W. H. Byford, A. M., M. D. Fecundity, Fertility, Sterility, and Allied Topics. By J. Matthews Duncan, M. D. New edition. A Treatise on the Diseases of the Eye, including the Anatomy of the Organ. By Carl Stellwag von Carion, M. D., Professor of Ophthalmology in the Imperial University of Vienna. Translated from the German, and edited by Charles E. Hackley, M. D. A Practical Treatise on Bright's Disease of the Kidneys. A new, enlarged edition. By T. Grainger Stewart, M. D. Wunderlich on Thermometry; with Notes and Additions by E. Seguin, M. D. Illustrated. Handbook of Therapeutics. By Sidney Ringer. New, rewritten, and enlarged edition. Elementary Treatise on Physics, Experimental and Applied. For the Use of Colleges and Schools. Translated and edited from Ganot's Éléments de Physique. On the Diseases of the Throat, Larnyx, etc., with their Diagnosis and Treatment. By J. Solis Cohen, M. D. Illustrated.

James Campbell, of Boston, announces the following works: The Detection of Criminal Abortion. By Ely Van de Warker, M. D. A Contribution to the Treatment of the Versions and Flexions of the Unimpregnated Uterus. By Ephraim Cutter, A. M., M. D. Experiments upon the Physiological Action of Bromide of Potassium and Ammonium, as determined on Man and the Lower Animals. Second edition, entirely rewritten. By Robert Amory, M. D. Parasitological Investigations upon the Vegetable Organism found in the Measles, Kine-pock, Small-pox, Typhus, and Typhoid Fevers, etc. By Prof. Ernst Hallier, professor at Jena. Translated from the German by H. C. Perkins, M. D.

Lindsay & Blakiston, of Philadelphia, announce the following books: Lectures on the Clinical Uses of Electricity, delivered at University College. By J. Russell Reynolds, M D. A Manual of Dental Mechanics, the Materials and

Appliances used in Dentistry, etc. By James Oakley Coles, D. D. S., etc. With Illustrations. Dowie on the Foot and its Covering. From the second London edition. Anstie on Neuralgia.

Henry C. Lea, of Philadelphia, has the following announcements: Ashhurst's Principles and Practice of Surgery. Green's Pathology and Morbid Anatomy. Bryant's Practice of Surgery. Barnes on Diseases of Women. Williams on Consumption. Roberts on Urinary Organs. Second edition. Smith on Mechanical Aids to Labor. Smith on the Uterus. Taylor on Poisons. Third edition.

Books and Pamphlets Received.—The Druggists' General Receipt Book: comprising a Copious Veterinary Formulary, numerous Receipts of Patent and Proprietary Medicines, Druggists' Nostrums, etc.; Perfumery and Cosmetics, Beverages, Dietetic Articles and Condiments, Trade Chemicals, Scientific Processes, and an Appendix of Useful Tables, by Henry Beasley, Author of "The Book of Prescriptions," etc. Seventh American, from the last London edition. Philadelphia: Lindsay & Blakiston, 1871. 8vo, pp. 497.

The Physician's Dose and Symptom Book: containing the Doses and Uses of all the Principal Articles of the Materia Medica, and Original Preparations; a Table of Weights and Measures, Rules to proportion the Doses of Medicines, Common Abbreviations used in writing Prescriptions, Table of Poisons and Antidotes, Classification of the Materia Medica, Dietetic Preparations, Table of Symptomatology, Outlines of General Pathology and Therapeutics, etc. By Joseph H. Wythes, A. M., M. D., etc. The tenth revised edition. Philadelphia: Lindsay & Blakiston, 1871.

Skin Diseases, their Description, Pathology, Diagnosis, and Treatment. By Tilbury Fox, M. D. (Lond.), M. R. C. P., etc. First American, from last London edition. Edited by M. H. Henry, M. D., Surgeon to the New York Dispensary, Department of Venereal and Skin Diseases, Fellow of the New York Academy of Medicine. New York: W. Wood & Co., 1871.

A Practical Treatise on Fractures and Dislocations. By Frank Hastings Hamilton, A. M., M. D., LL. D., Professor of Practice of Surgery with Operations, Bellevue Hospital Medical College, etc., etc. Fourth edition, revised and improved. Philadelphia: H. C. Lea, 1871.

A New Operation for Bony Anchylosis of the Hip-joint, with Malposition of the Limb, by Subcutaneous Division of the Neck of the Thigh-bone. By William Adams, F. R. C. S., etc., etc. Illustrated by numerous Wood Engravings. London: J. & A. Churchill, 1871.

Medical Education in America; an Annual Address before the Massachusetts Medical Society, delivered June 7, 1871. By Henry J. Bigelow, M. D., Professor of Surgery in Harvard University. Cambridge: Welch, Bigelow & Co., 1871. 8vo, pp. 83.

The Late Dr. John Connolly, of Hanwell, England. By Charles A. Lee, M. D. Reprint from the *American Practitioner* for August, 1871. pp. 14.

A New Ovariotomy Clamp. Also applicable for other Surgical Purposes. By B. F. Dawson, M. D. Reprint from the *American Journal of Obstetrics and Diseases of Women and Children.*

The Dependence of Life on Decomposition. By Henry Freke, M. D., tc., etc. Reprint from the *Dublin Quarterly Journal of Medical Science*, August, 1871. pp. 55.

Cancer; its Classification and Remedies. By J. W. Bright, M. D., Lexington, Ky. Philadelphia: L. W. Butler, M. D., 1871.

Odd Hours of a Physician. By John Darby. Philadelphia: J. B. Lippincott & Co., 1871.

Transactions of the Indiana State Medical Society, for 1871. Indianapolis: John G. Dougherty. pp. 241.

The Physician's Visiting List for 1872: Twenty-first year of its publication. Philadelphia: Lindsay & Blakiston.

Transactions of the Medical Association of the State of Alabama. Annual Session of 1871. Mobile, 1871, pp. 356.

Annales de Dermatologie et de Syphiligraphie. Publiées par le docteur A. Doyon. Deuxième année, No. 6. Paris: Victor Masson et fils, 1871.

Report of the Superintendent of Health on the Subject of Fat and Lard Melting. Providence: Hammond, Angell & Co. 1871. pp. 11.

Albany Hospital. A Statement, from the Governors, of its History and Present Condition. pp. 11.

Miscellaneous and Scientific Notes.

Treatment of Chronic Catarrhal Pneumonia by Atmospheric Pressure. (Wiener Medizinische Wochenschrift, Centralblatt Medizinischer Wissenschaften, No. 26, 1871.)—It has been observed that, in consequence of increased atmospheric pressure, the lungs become distended to a certain degree, and that this result, according to the number of sittings in the pneumatic apparatus, still remains for a shorter or longer period. This

latter result depends, according to Von Liebig's view, upon the fact that the animal tissues, and the lungs as well, are subjected, within the limits of their elasticity, to a subsequent elastic action when distended. The direct consequence of the distention is a slower respiration and a more extended movement of the lungs, which is shown by the greater depth of the respiratory movements, that is to say, by the greater volume of air inspired and expired each time. It has been further noticed, in consequence of the lightening of the venous circulation produced by the distention of the lungs under increased atmospheric pressure, that catarrh of the larynx and bronchial tubes heals more rapidly than under ordinary circumstances. Resting upon these observations, the author assumed that the employment of increased atmospheric pressure, in consolidation of the lungs dependent on catarrhal causes, would be of benefit, since these consolidations generally form first in the apices of the lungs, which of all parts of the lungs display the least mechanical activity, and hence favor a stasis of blood, and a collecting of the secretions, and, since the increased atmospheric pressure not only dissipates the catarrh more speedily, but also by distention and fuller movements of the apices of the lungs by means of deeper inspirations, effect a dislodgment of the secretions. This view the author has found confirmed by his practice. He narrates two cases in which increased atmospheric pressure did good service. One case was that of a chronic catarrhal pneumonia in the process of extension; in the second the catarrhal process was, as to its most important features, extinguished, and there remained only the subsequent state of the apices of the lungs to be relieved.

Nucleated Blood-cells in Leucæmia of Infants. (*Archiv der Heilk.*, 71, xii., 1871.)—While all previous data on the existence of nucleated blood-cells in the blood of leucæmic patients have been derived from blood from the dead body, Dr. Neuman has assured himself of the presence of nucleated blood-cells during life, by puncturing with a needle for a drop of blood. Besides numerous colorless granular cells of 0.005–0.012 mm. in diameter, which under healthy circumstances

present no nuclei, there were found single homogeneous, pale-yellow cells of 0.006–8 mm. in diameter, with a colorless round or spindle-shaped nucleus, or with numerous granules (remains of nuclei). By the addition of acetic acid, these latter cells lost their color, and within their contour, which appeared as a fine circular line, the somewhat yellowish tinged nuclei and granules stood out with a sort of fatty glitter. Dr. Neuman is inclined to regard the presence of these transition forms between colorless and colored blood-cells, which are produced by the diseased marrow of the bones, as a diagnostic sign of the disease of the marrow in leucæmia, since in a normal state they are found only in the marrow, and there is no evidence that in leucæmia they occur also in other organs, provided they are not carried into the same. In proof of this, he asserts that he has found nucleated cells in the general circulation of newly-born infants at term, and not alone (as has already been made known) in the pancreas, spleen, liver, and bony marrow. How long they remain after birth is not certain; they were absent in a child which died of peritonitis, sixteen days after birth.

The Social Evil in San Francisco.—This subject was the theme of discussion at the meeting of the San Francisco Medical Society, September 26th. There appeared to be but one sentiment among the members, and it found expression in the unanimous adoption of the following resolution:

Resolved, As the sense of this Society, that all laws which license, and therefore sanction, prostitution, with the design of restraining disease or licentiousness, are unsound in principle, derogatory to private and public morals, and incapable of accomplishing what they attempt.—*Pacific Medical and Surgical Journal.*

Kings County Medical Society.—At a meeting of this association, held October 13th, it was resolved to establish a fund, to be contributed to by medical men only, for the relief of the physicians who had suffered by the Chicago fire. A corps of canvassers was appointed to visit the different wards, and the contributions during the first three days exceeded nine hundred dollars. The good work still goes on, and we hope

that all members of medical associations will make a like concerted effort for the relief of their professional brethren in distress.

Relief for Chicago Physicians.—The members of the committees appointed by the County Medical Society to raise a fund for the relief of destitute physicians of Chicago have been working with great energy and success. At the time of our last reports from the treasurer, Dr. S. T. Hubbard, the contributions amounted to $4,737.76. We doubt not that every physician in the county will deem it a sacred duty to exert himself to the utmost in behalf of this noble charity.

Lady Students in Moscow.—Ladies are now to be admitted to the lectures on medicine at the University of Moscow, and to graduate, provided they can pass the usual examinations. It has been found impossible, as at first intended, to institute separate lecture and class rooms, so that both sexes will meet in the general class-rooms. The council of the university have fully confirmed the action of the School of Medicine in this matter, and the ladies may therefore expect to enjoy their privileges undisturbed by doubts or fears.

Divided Medicines.—A very neat and exact method of preparing many remedies for administration has been adopted by Frederick Kraus, a pharmaceutist of Cincinnati. It consists in spreading the medicines on a thin sheet of gelatine, which is marked with lines for division, according to the quantity of the medicine required. The portability of medicines thus prepared is very evident from the specimens sent us for examination.

Canada Medical Association.—The fourth annual session of this Association was held in Quebec, on September 13th and 14th, but no business of any importance was transacted. Dr. Sewell, of Quebec, was elected President, and Montreal designated as the place of next meeting.

Niemeyer's Successor.—It is announced that Prof. Leibermeister, of Zurich, has been appointed to the chair left vacant by the death of Niemeyer.

An Historian's Brain.—The examination by Mr. Marshall of the head of Mr. Grote is said to have revealed the fact that the brain, though unusually rich in convolutions, was remarkably small.

The Schools and Hospitals of Vienna.—We take the following from an interesting Vienna letter written by Dr. Melvin Rhorer to the *American Practitioner:*

I set out with the remark that elementary instruction is entirely out of the question here. Such branches, of course, are taught, but these lectures are only attended by those who are regularly entered for their medical degrees. Independent of the fact that few Americans would care to devote the seven years required for this purpose, our modes of instruction at home, in my judgment, are superior—certainly at least better adapted to our wants. It is entirely for clinical instruction that students resort here, and I can safely say that nowhere can the advantages in this field be excelled. In London and Paris the student is bewildered with a dozen hospitals and schools. Clinics are held at so nearly the same hour, and at places so far apart, that it is almost impossible to attend more than one or two during the same day. Here every thing is centralized in the Imperial Hospital; and, if one desires it, he may work away from sunrise to sunset without loss of time. Not having seen in any of our journals a detailed description of this hospital, I venture to give one here, as it is at the same time the medical department of the University of Vienna.

It was founded in 1787 by the Emperor Francis Joseph II., who must have had in view the object for which it was intended—an abode for the sick and a school for learning. It is certainly, except in point of size, no architectural monument to his memory. It covers an area of ten acres or more. It is two and a half stories high, the walls being of brick, rough cast, and windows and doors of the plainest pattern. It is hard to obtain an idea of its immense size, for it is so constructed that at no place can the eye take it in at one glance. Situated in a crowded part of the city, its street front resembling an ordinary façade, it has none of the externals we are accustomed to look for in a hospital. Passing through its arched gateway you enter the large court, containing about three acres, tastefully laid out in shade-trees, flowers, walks, and fountains. It is here that you are first impressed with the magnitude of the building. There are, however, eight other courts connected with this, which can only be separately viewed. At the end of the last court stands the Pathological Institute, which was erected by Rokitansky in 1859. This is

a building of far more pretensions than the rest of the hospital. It contains the dead-house, the lecture-room for chemistry and materia medica, and the various operating-rooms. To the right of this, on a hill, stands the building for the insane. It was evidently erected in the times when it was considered criminal to lose one's mind. It could easily be mistaken for a prison or fortification. It is a large round tower with narrow windows, and shut off from the rest of the world by a moat. The wards of the hospital are constructed in the simplest manner. Every thing is scrupulously clean, but no attempt whatever has been made at embellishment. Their number is one hundred and ten, and they contain twenty-five hundred beds. Besides the wards there are thirty clinical amphitheatres, the apartments for the various officers, and a chapel. There are seemingly no modern conveniences about the hospital. The heating is done by stoves, and the water taken to the wards by the convalescents from the fountains in the courts.

The hospital being a government institution, it has two different staffs, civil and medical. There are twenty-eight civil and fifty-two medical officers. Counting servants and nurses, three hundred and thirty-two persons are employed in the institution. Everybody is paid. The assistant physicians, of whom there are forty-two, receive from one hundred and twenty-five to two hundred dollars per annum. Besides this they are lodged, but not fed. Privilege is allowed them, however, of private practice and teaching. Most of the real instruction of the university is done by these men. The civil director of the hospital gets sixteen hundred dollars.

The diet of the hospital is supplied entirely by contract, and at a price which would astonish a board of governors at home. The contractor issues from his immense kitchen what is ordered by the physician from his bill of fare, and only such is paid for—so much for "a clear broth," which is truly very clear; so much a pound for bread, etc. Any waste by oversupply is his own loss. The only stimulants used are a weak, sour native wine and Vienna beer. Medicines are supplied at so much per dose in like manner. About thirty cents per day is the cost of maintaining a patient in the public wards. There are, besides these wards, private wards of various classes for those who can afford to pay more. Everybody must pay something—either the state, city, church, fraternity, family, or friends of the patient must become responsible for the maintenance of the patient. A Viennese pays twenty cents per diem, a foreigner double that amount.

About twenty thousand patients are admitted annually, besides those in the lying-in wards. Happening to be in the

receiving-room one day, I noticed over one hundred had been admitted the day before. From eight to ten thousand children are born in the obstetrical wards during the year. The mother is allowed two weeks' residence after the birth of her child. At the end of this time, if she is unable to support it, it is sent to the foundling hospital, where it is fed on cow's milk. About fifty per cent. of these children die in infancy. Those that live and are not claimed by their parents repay the state either by service in the army or other government work. A large number of the cases admitted into the hospital are trivial, and with us would be treated as dispensary patients. The out-door practice here is quite inconsiderable—nothing like the important feature it is in the London hospitals. There are three hundred beds devoted to syphilis. There is no lack of disease in every form and degree, and every clinic is profusely illustrated. The death-rate is apparently enormous. The chapel is situated over the gateway between the first and second courts. I have seldom passed that way without hearing the funeral-service. The manner of dealing with the dead is curious. Three hours after decease the corpse is removed to the dead-house, to remain twelve hours. A rope, which communicates with a bell in the watch-room, is placed in its hands, the slightest movement of which would sound an alarm and bring instant succor. Of all the thousands who have died here and had the opportunity afforded them of pulling the bell, not one has yet done it. All are dead when they reach the solemn chamber devoted to them. After resting here the required time, the funeral-service is performed in the hospital chapel alike on the known and the unknown, on the bodies which are claimed and on those which are destined for the dissecting-table.

The faculty of medicine in the University of Vienna, although it has recently lost in Skoda and Oppolzer two of its greatest lights, is still filled generally by men of world-wide reputation. In fact, only from such men has the choice been originally made. There is no such thing as promotion by seniority, and a Viennese reputation alone is by no means sufficient. Billroth made his name at Zurich, and was called here from Berlin. In most of the departments there are two separate chairs for each branch. Each professor has lectures in a different amphitheatre, and issues his own tickets, which students take or not as they wish. Of course, the most popular teachers have the largest classes. Billroth and Dumreicher are the surgeons, Braun and Spät the obstetricians and gyæncologists, while Hebra and Neumann hold the chairs of dermatology. Sigmund and Zeisel lecture on syphilis, Jäeger on the eye, and Rokitansky on pathological anatomy. The teaching

by this brillant array of professors is wholly clinical. The cases for illustration are seemingly without number. The greatest difficulty with the foreign student lies in the lectures being given in a strange tongue. If he has come unacquainted with the German, several months will necessarily be consumed in acquiring a sufficient familiarity with the language to follow the courses. It is for this reason that so little profit is to be derived from a mere visit to a foreign school. It requires residence to learn what it is, and it would require this did one come with perfect acquaintance with the language. One has to dig it out for himself—foreigners can explain nothing. They either don't know, or can't tell it if they do. Their curiosity, if they have any, seems not to have spent itself in fields that interest Americans.

Excellent as is the faculty and splendid the clinics, it is from the assistants that the most practical lessons are obtained. They teach every thing. The bulletin-board at the university gate is crowded with the announcements of their courses—on the eye, the chest, the ear, on stricture, electro-therapy, minor and operative surgery, operative midwifery, etc. The following is the manner in which obstetrics and gynæcology are taught, as these are the branches in which I am especially interested.

The same practical method prevails in other departments. The student first enrolls himself for the course of the assistant either of Braun or Spät. Rokitansky, Jr., is Braun's assistant, and the one whose tickets I took. All the operations are performed under his directions by each student on the cadaver. The various positions are first given which the student must recognize by the touch. The normal deliveries are then gone through with, and afterward the more complicated ones. Forceps-deliveries, craniotomy, decapitation, Cæsarean section, etc., are practised. Every operation is performed at least once by each student who takes the course, and is witnessed some forty or fifty times. After this course, practice on any complicated case is allowed in the wards. The student registers his name for whatever nights he wishes to be on duty, and his proportion of beds is then assigned him. During one night there were forty births, with but five of us on duty.

Another great clinical field is the obstetrical receiving-room. Every pregnant woman who presents herself must go regularly to bed before being examined. At a stated time the professor or his assistant makes the visit, and gives each a separate examination, after which his class is allowed to do the same. If labor is found to be not more than fourteen days off, the women are permitted to remain, otherwise they are given a card specifying the time when they should return.

The midwives or nurses attend to the ordinary cases of labor during the day. Complicated cases are delivered by the professor or his assistant before the class.

It will be seen that the fundamental idea of teaching here is not only to make each one familiar with the sights of the various operations, but to give him personal experience in their performance. Braun interferes as seldom as possible. As often as he can, he simply directs others in the various procedures. His lecture occupies two hours five times a week—the first hour upon obstetrics, the next upon gynæcology. He pursues no system; whatever the wards offer form his subject. During the last month I have heard him several times on eclampsia, and at least half a dozen times on abortion and craniotomy. At the end of the obstetrical hour the gynæcological lecture is given in another room. Here, by an admirably-contrived chair, upon which the patient is seated, each student has a fair view of the cases. A very few remarks are made by the operator, the time being chiefly spent in the operations. Although I have seen at this clinic most of the operations peculiar to this branch performed quite a number of times, the material is not so rich as in the obstetrical department. Ovariotomies are never performed here, but are turned over to the surgeon.

Prof. Braun is about fifty years of age, has a pleasing face, and is a thorough German in appearance. At seven o'clock every morning he walks his gynæcological wards, followed by his private students. Each case is examined, explained, and prescribed for. This occupies about one hour. From one to three o'clock he gives a clinical lecture. The various operations are performed before the class. He delivers his lectures sitting; speaks very slowly and distinctly, but with little animation, offering in this respect a striking contrast to the fiery style of his assistant, Rokitansky, Jr., who bids fair in his chosen field to rival the reputation of his illustrious sire.

There is a daily average of thirty-five applicants for admission into the lying-in wards, ten or twelve of whom are generally rejected. After being admitted the patients are assigned to their respective wards, and the students given their proportionate number of cases. Before a student, however, is placed in charge of a complicated case, he is required to have taken a course of operative midwifery on the cadaver with one of the assistants to the clinic. This course lasts six weeks.

As in the obstetrical department, so in the other branches, the instruction is as practical as the nature of the subject will admit. The usual length of the operative courses is about six weeks, when they are immediately repeated. The pro-

fessors lecture five months in winter and three in summer. The fees vary from ten to fifty florins for each course. A foreigner pays double the amount required of an Austrian.

The New Pharmacy Law.—From A. B. Prescott, M. D., Professor of Pharmacy in the University of Michigan, we have received the following communication, dated October 7th, regarding the aim and operation of the new law for the qualification of druggists:

The friends of better pharmacy in this country look with solicitude at the trial of the apothecaries' law of New York. To ordain and enforce an efficient examination of all practising pharmacists is indeed no half-way attempt, but an entire step—in precisely the right direction. The objections to the essential features of the law seem to us, at a distance, to resolve themselves into this one objection, that it was too long a step to take at once. It permits no exemption from the examination; either for those already established in the practice of pharmacy, or for those holding a diploma of graduation from a college of pharmacy.

Evidently, the framers of the law believed that a just measure for the security of the public health and the efficiency of medical aid ought not to be delayed for a generation to pass away. No pharmacist who has ever been fairly qualified for his avocation can reasonably object to being examined for a license. The science of his business is in too constant use to rust. And assuredly every competent pharmacist must be aware that he gains by the elision of the incompetent, who reduce the average compensation of business a hundredfold more than he can lose in the expense of an examination. The elevation of the standard of employés may indeed increase the expenses of employers, and possibly the pinch of this commercial shoe may cause symptoms not referred, by the sufferer, to their real source.

Should graduates of schools of pharmacy be exempt from examination? Certainly it is desirable to support, in every legitimate way, all the colleges of pharmacy we have. But the truest and wisest support of the schools is, to put before young men the necessity, not of graduation, but of education. Demand knowledge, and men will go where they must obtain it. This is seen in England, at present, in the classes and laboratories crowded with pharmaceutical students in preparation for authorized examinations. A law which accepts a diploma of graduation as sufficient evidence of proficiency, while requiring all non-graduates to be examined, is liable to send

more students to poor schools than to good ones. And the fact that only very slender provisions for the education of pharmaceutists have been made, in this country, renders it scarcely safe to excuse all graduates from examination. The usual pharmacy-college curriculum comprises lectures on alternate evenings during two terms of five or six months, with little or no study-time and no requirement of laboratory training. The requirement of a term of apprenticeship before graduation, so long as it fails to insure any scientific instruction or training during apprenticeship, does not affect the educational result, though it may aid in regulating the probation before responsible business. Now, this slender curriculum being the precedent—while, in some large cities, colleges of pharmacy have suspended instruction because the proprietors of drug-stores will not excuse students from work on the alternate evenings of the winter; and, in smaller cities, embryo colleges are waiting to establish the alternate evening lectures so soon as diplomas shall be demanded by law—it is to be feared that a law which licenses graduates without the examination required of all others may bring into existence a sort of diplomas which will be no credit to anybody. The majority of those pharmacists who dare not venture, or fail on examination, will be likely to seek the cheapest diplomas they can obtain, to avoid being thrown out of business. It seems that legal measures should be so taken as to cherish and guard sound pharmaceutical education. A legal demand for examination must bring students to all useful colleges of pharmacy, and *also* stimulate their teachers to elevate the standard of graduation. Properly-qualified graduates will gladly incur the slight expense of a civil examination, not only to sustain their own credit and that of their *alma mater*, but for the relief of their profession from the unqualified, whether such be in possession of a diploma or not.

It scarcely need be urged that a faithful civil examination furnishes to the public the best evidence of competence for safe duty, and also furnishes an excellent mental stimulus to the person examined. What would be the condition of the medical staff of the United States Army without its initiatory and recurring examinations? The appeals for civil-service examinations are evidence of the tendency of opinion on this point.

It is hoped that, whatever changes may be made in details, New York will hold the essential features of the step already taken in regulation of pharmacy. It would be pitiful to recede. Half steps would meet even more objection.

Another word: inasmuch as the physician and the pharmaceutist are partners in the healing art, while society holds

the doctor responsible for results, it is clearly *the business* of the medical profession to work for the protection of qualified pharmacists.

Appearance of the Eyes in Trichinosis.—Dr. A. Kittel, in the *Wien. Allg. Med. Zeit.*, mentions that in 1870 there were in Elbau, in Saxony, no less than ninety persons who had partaken of the flesh of a pig recently killed. Soon after the stiffness of the muscles of the neck was remarked, it was noticed that the expression of the eye was very rigid, although the eyeball could be moved about without difficulty. This was attributed to the presence of trichinæ in the muscles of the eyeball. The patients were conscious of stiffness and difficulty in motion of the eyes. In a few days œdema of the eyelids was noticed, and of the tissues around the orbit. Afterward the conjunctiva oculi became œdematous so as to resemble the appearance in gonorrhœal ophthalmia. There was injection of the conjunctiva of the eye, and the palpebral conjunctivæ were very red, and also a little œdematous. When the œdema of the eyeball was at its height, the eyeball was rather prominent, and its motility disturbed. The iris contracted, and there was great mydriasis, so that there was no motion of the iris even in changing of the light. The power of seeing was so far disturbed that the patients said they saw every thing as if surrounded by a halo. Such appearances were only noticed in the severest cases of trichinosis; they were bilateral and symmetrical. Prof. Klob and Dr. Bonor have noticed trichinæ in the muscles of the eyes in which paresis occurred during life. The curious rigidity of expression, the unsteady glance, and the impossibility of fixing any point for any length of time, are explained partly by the paresis of the muscles, and partly by their being pushed forward. The disturbance of vision may arise from pressure on the optic nerve. Whether the mydriasis is owing to irritation of the sympathetic, as is seen in cases of helminthiasis, is doubtful.—*The Doctor.*

Victims of Chloroform.—In view of the recent death from chloroform, in Brooklyn, the observations of the *Medical Times and Gazette* of October 7th, that such deaths seldom come alone, is especially *à propos*. We take the following from that journal:

Of late, we regret to say, several instances have occurred in London and the country. On Thursday week an inquest was held on the body of a drayman, aged thirty-four, at the

Manchester Royal Infirmary, who, when admitted into the institution, was suffering from a fracture of the leg. Mr. J. G. Gordon, house-surgeon, attempted to set the limb, but, after several trials, failed, as the deceased shrunk from the operation. Mr. Gordon suggested that chloroform should be administered, and the patient assented. A rag sprinkled with chloroform was accordingly placed several times in contact with the face of the deceased, and Mr. Gordon frequently essayed to adjust the limb, but the deceased could not be got sufficiently under the influence of the anæsthetic, and each attempt was unsuccessful. The pulse of the patient suddenly ceased to beat. The usual remedies for resuscitation were resorted to, without effect. Mr. S. Buckley, physician's assistant, made a *post-mortem* examination of the body, and discovered fatty degeneration of the liver and kidneys. The brain was softened, and the heart flabby and much dilated.

Obituary.

Henry Hyde Salter, M. D., F. R. S., whose death occurred on August 31st, was born in 1823, and, being the son of a surgeon in large practice, received his initiatory lessons in medicine at an early age, and under peculiarly favorable circumstances. As a student in the University of London he gained several prizes and honors, and, on his election subsequently to fellowship in the College of Physicians and the Royal Society, he was the youngest member of both those societies. In 1851 he became sub-editor of Todd's "Cyclopædia of Anatomy and Physiology," and contributed the articles "Pancreas" and "Tongue." He also assisted largely in the preparation of Todd and Bowman's "Physiological Anatomy," in 1854 was appointed Lecturer on Physiology in the Charing Cross Hospital, and in 1866 succeeded to the lectureship on Medicine. Himself a sufferer from asthma, he devoted special attention to diseases of the lungs, and his work on Asthma was recognized as the best authority on that subject. His health had been failing for two years past, but he continued his literary labors, and only a few weeks before his death was engaged in superintending the passage through the press of his article on Asthma for the third volume of Reynolds's System of Medicine. He was energetic and successful as a practitioner, and as a lecturer was always popular with his class.

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ART. I.—*The Poet Homer's References to Medicine.* By J. C. McMECHAN, M. D., Cincinnati.

HOMER was one of the most splendid geniuses of antiquity; but, whoever sits down to read his "Iliad," must remember he is about to peruse the most ancient book in the world next to the Bible. Without making this reflection, he cannot enter into the spirit nor relish the composition of the author. Homer's gods, it must be confessed, though they are always lively and animated figures, yet sometimes want dignity. It is well known that the battles and woundings of the gods gave so much scandal to Plato,[1] that he wished to cast Homer out of his "Republic," much to the indignation of Heraclides Ponticus. In apology for Homer, it must be remembered that, according to the fables of those days, the gods are but one remove above the condition of men. They have all human passions. They drink and feast, and are vulnerable, like men; they have children and kinsmen in the opposite armies; and, except that they are immortal, that they have houses on the top of Olympus, and winged chariots in which they are often flying down to earth, and then reascending in order to feast

[1] Alleg. Hom., p. 511.

on nectar and ambrosia, they are in truth no higher beings than the human heroes, and therefore very fit to take part in their contentions.

The beautiful propriety with which Homer treats every subject that he touches on, may be seen in his never describing a wound as mortal, except when it is inflicted in a part really vital. The principal physicians that accompanied the army against the Trojans were Machaon and Podalirius, the sons of Æsculapius. They did not confine themselves to attending the wounded, but both led wings of the army.

Their renown [1] as surgeons and physicians extended beyond the "Iliad," for they are referred to in the subsequent poem of Arctinus the Ilia-Persis, wherein the one was represented as unrivalled in surgical operations, the other as sagacious in detecting and appreciating morbid symptoms. It was Podalirius who first noticed the glaring eyes and disturbed deportment which preceded the suicide of Ajax. It is said that Podalirius was the first physician, as well as the first person, who ever bled a patient in order to effect a cure.[2] Being cast in a tempest on the shores of Caria, he was rescued by a shepherd, who conducted him to Dametus the king, whose daughter had fallen from the top of the house. She was motionless and insensible. He bled her from both arms, and had the happiness of restoring her to life.

Podalirius and Machaon were held in high esteem by the army, for, in one of the battles, "Paris, the husband of fair-haired Helen, disabled Machaon — performing prodigies of valor—wounding him on the right shoulder with a triple-barbed arrow. For him then the valor-breathing Greeks trembled lest perchance they should slay him in the fight, and immediately Idomeneus addressed noble Nestor:

"'O Nelian Nestor, great glory of the Greeks, come ascend thy chariot, and let Machaon mount beside thee; and direct thy solid-hoofed horses with all speed toward the ships,

ἰητρος γὰρ ἀνὴρ πολλῶν ἀντάξιος ἄλλων
ἰούς τ' ἐκτάμνειν ἐπί τ' ἤπια φάρμακα πάσσειν,

[1] Grote, History of Greece, vol. i., p. 348.
[2] Renouard's History of Medicine.

for a medical man is equivalent to many others, both to cut out arrows and to apply mild remedies!'[1]

"Thus he spoke, nor did the Gerenian knight, Nestor, disobey. Forthwith he ascended the chariot, and Machaon, blameless physician, son of Æsculapius, mounted beside him." In this same battle, Eurypylus, one of the heroes, was wounded. He called upon his friend Patroclus to dress his wounds. This Patroclus proceeded to do, having informed him that "the physicians Podalirius and Machaon, the one he thought having a wound, were lying at the tents, one in want of *ἀμύμονος ἰητῆρος, a faultless physician*,[2] and the other awaiting the sharp battle of the Trojans upon the plain.

Patroclus, laying him down at full length, cut out with a knife the bitter, sharp arrow from his thigh, and washed the black blood from it with water:

ἐπι δὲ ῥίζαν βάλε πικρήν
χερσὶ διατρίψας ὀδυνήφατον ἥ οἱ ἅπασας
ἔσχ' ὀδύνας, τὸ μὲν ἕλκος ἐτέρσετο, παύσατο δ' αἷμα,[3]

"*Then he applied a bitter, pain-assuaging root, rubbing it in his hands, which checked all his pangs; the wound indeed was dried up and the bleeding ceased.*" Menelaus, one of the chief heroes of the "Iliad," being wounded, Machaon was sent for. The herald, approaching him, said:

"'Come, O son of Æsculapius, Agamemnon, king of men, calls thee that thou mayest see martial Menelaus, the son of Atreus, whom some skilful archer of the Trojans or of the Lycians has wounded with a dart.'[4]

"Thus he spoke, and they proceeded to go through the host, through the wide army of the Greeks; but when they had now arrived where fair-haired Menelaus had been wounded (but around him were collected as many as were bravest, in a circle, while the godlike hero stood in the midst), instantly thereupon he extracted the arrow from the well-fitted belt. But when he perceived the wound where the bitter shaft had fallen, having sucked out the blood, he skilfully sprinkled on it soothing remedies, and which benevolent Chiron had formerly given to his father."

[1] Homer's Iliad, lib. xi., l. 514–515.
[2] Idem, lib. xi., 835.
[3] Idem, lib. xi., 846, *et seq.*
[4] Idem, lib. iv., 204, *et seq.*

The fatal woundings of the heroes were quite frequent. In book iv., in the fight between Diores and Pirus, Homer says: "The reckless stone which Pirus threw, struck Diores at the ankle, and entirely crushed both tendons and bones; in the dust he fell, stretching forth both hands to his dear companions, and breathing forth his soul. But Pirus, who struck him, ran up and pierced him in the navel with his spear, and darkness veiled his eyes." Æneas, in the fight between himself and Diomede, was almost fatally wounded.[1] "But Diomede, seizing in his hand a huge stone, such as no two men could carry—such at least as mortals are now; but he, even alone, easily wielded it—with it he struck Æneas on the hip, where the thigh is turned in the hip—they call it the socket—the socket he smote violently, and broke the hip, besides both tendons, and the rugged stone tore off the skin. But the hero, having fallen on his knees, remained so, and supported himself with his strong hand upon the ground, and dark night veiled his eyes. And there Æneas, the king of men, would have perished, unless Venus, the daughter of Jove, had quickly perceived him (Venus was his mother, who brought him forth to Anchises as he fed his oxen), but around her own dear son she spread her white arms, and before him she extended the folds of her shining robe as a defence against arrows. She indeed stealthily bore off her dear son from the battle." But Venus herself did not escape without being wounded. She was pursued by Diomede, who, having overtaken her, "wounded the feeble goddess in the extremity of the hand. Instantly the spear pierced through the skin, through her ambrosial robe (which the Graces themselves had wrought). Immortal blood flowed from the goddess, ichor such as flows from the wounded gods. For they eat not bread, nor drink dark wine, therefore are they bloodless, and called immortal." Swift-footed Iris took her then in her golden chariot to high Olympus, and the goddess ever afterward entered not into bellicose affairs.

"Eurypylus, taking aim with his shining spear, smote Apisaon, son of Phansias, shepherd of the people, in the liver, under the diaphragm, and immediately he relaxed his limbs."[2]

[1] Homer's Iliad, lib. v., 301, *et seq.* [2] Idem., lib xi., 574, *et seq.*

In book xvi., Diomede, who wounded Æneas, is represented as being wounded, and the physicians healing his injuries: "Brave Diomede, indeed, is wounded, and spear-renowned Ulysses is stricken, as also Agamemnon. About these, physicians skilled in many remedies are employed healing their wounds." In the same book the poet describes the fatal wounding of Sarpedon: "But Patroclus rushed on with his javelin, and the weapon did not escape him in vain, for he struck Sarpedon where the midriff encloses the compact heart. And he fell as when falls some oak, or poplar, or lofty pine, which the workmen fell in the mountains with newly-sharpened axes; so he lay stretched out before his horses and chariot gnashing with his teeth, grasping the bloody dust." Achilles is spoken of as taking the life of Lycaon in rather a scientific manner, or, rather, he displayed his knowledge of anatomy by wounding him at such a vital point:

"But Achilles, drawing his sharp sword, smote him (Lycaon) at the clavicle near the neck. The two-edged sword penetrated totally, and he prone upon the ground lay stretched out, but the black blood flowed out and moistened the earth."[1]

Perhaps the most interesting death of all the heroes of the "Iliad" was that of Hector. He had fought nobly through the whole war, and was looked upon as the greatest general of the Trojans. On leaving his palace to engage in the war, he had had a very tender parting with his wife, Andromache, and her prayer to him to remain at home is indeed beautiful. Said she: "O Hector, to me thou art both father and venerable mother and brother; thou art also my blooming consort. But come now, pity me, and abide here in the palace, nor make thy child an orphan, and thy wife a widow."[2]

On the day of the fight between Hector and Achilles, thousands of both armies were looking on, and the progress of the fight was watched with intense eagerness from the walls of Troy, by Hector's companions-in-arms. He was accoutred in the armor of Patroclus, whom he had slain, but Achilles had on the wonderful armor made for him by old Vulcan. After the fight had grown intensely interesting, the poet continues:

[1] Homer's Iliad, lib. xxi., 116, *et seq.* [2] Idem, lib. vi., 429, *et seq.*

"But the beautiful brazen armor of which he had despoiled great Patroclus, having slain him, covered the greater part of his body; yet did there appear a part where the collar-bones separate the neck from the shoulders, and where the destruction of life is most speedy. There noble Achilles eagerly drove into him the spear, and the point went out quite through his tender neck."[1] Thus perished noble Hector.

Homer had some very good ideas in regard to the procreation of the human and divine races. In the present state of the obstetrical science, when the human species can be continued by means of human spermatozoa, a syringe, and healthy female genitals, it may not be uninteresting to look back a few thousand years and see the *modus operandi* at that time.

Homer must certainly have believed in marriage, for he says, "Since whatever man is good and prudent loves and cherishes his spouse."[2] And again he says, "It is good to be mingled in love with a woman."[3] In the last paragraph of book i. of the "Iliad," the author makes old Jove a good family man: "But when the splendid light of the sun was sunk, they retired to repose, each one to his home, where renowned Vulcan, lame of both legs, with cunning skill, had built a house for each. But the Olympian thunderer Jove went to his couch where he lay before, when sweet sleep came upon him. There, having ascended, he lay down to rest, and beside him golden-throned Juno." This goddess afterward, wishing to aid one of the armies, applied to Venus, to give her the beauty and charms necessary to lure old Jove into ways of dalliance, that his mind might be drawn from the contending armies, and her favorites gain the victory, while "he was treading the primrose path of dalliance." Said she to Venus, "Give now to me that loveliness and desire with which thou dost subdue all immortals, and mortal men;" and Venus "loosed from her fragrant bosom the embroidered variegated cestus, where all allurements were enclosed. In it were love and desire, converse, seductive speech, which steals away the mind even of the very prudent—this she gave to Juno." She then ap-

[1] Homer's Iliad, lib xxii., 323, *et seq.*
[2] Idem, lib. ix., 341, *et seq.* [3] Idem, lib. xxiv., 130.

plied to Somnus, to close the bright eyes of Jove in sweet sleep, but he refused. However, when Juno promised to give him in marriage one of the younger Graces, fair Pasithea, whom he fondly desired day after day, he finally consented. Repairing to high Olympus, she met Jove, and sweet desire came upon him. Juno appeared quite timid, and seemed afraid the other gods would see them, but Jove said:

"'Fear not, O Juno, that any of the gods or men shall behold us. Such a golden cloud will I spread around that not even the sun may see us through it, although his eye is very keen to behold.'

"Thus he spoke, and the son of Saturn encircled his wife in his arms.

"And the divine earth produced fresh herbage under them, the dewy lotus, and the crocus, and the hyacinth, close and soft, which elevated them from the earth. Upon this couch they reclined, and clothed themselves above with a beautiful golden cloud; and lucid dew-drops fell from it."[1]

Milton, in his "Paradise Lost," imitates Homer in the above passage, when he says of the couch of our first parents:

—— "Underfoot the violet,
Crocus, and hyacinth, with rich inlay,
'Broidered the ground."[2]

The gods were not content to increase their progeny in Olympus, but descended to earth to lure weak mortals into ways of wickedness. In the second book of the "Iliad," Homer says: "These were Ascalaphus and Ialmenus, the sons of Mars, whom Astyoche bore to powerful Mars, in the house of Actor, son of Azis; a modest virgin, when she ascended the upper part of her father's house; but the god secretly embraced her."

Æneas (the son of Anchises), one of the heroes of the "Iliad," and also of Virgil's "Æneid," was partly of divine and partly of human origin. "Him to Anchises the divine goddess, Venus, bore, couched with him, a mortal, on the tops of Ida."[3]

Eudorus was born in a still more romantic way. Our au-

[1] Homer's Iliad, lib. xiv., 342, *et seq.*
[2] Milton's "Paradise Lost," lib. iv., 700.
[3] Homer's Iliad, lib. ii., lines 820, 821.

thor says: "Eudorus, clandestinely begotten, whom Polymela, the daughter of Phylas, graceful in the dance, bore her, the powerful slayer of Argus (Mercury) loved, beholding her with his eyes among the dancers at a choir of golden-bowed Diana—huntress-maid; and, immediately ascending to an upper chamber, pacific Mercury secretly lay with her; whence she bore to him a son, Eudorus." [1]

It seems that even goddesses bore children before the proper time for labor-pains to come on, and, what is still stranger, Juno is represented as being pregnant with twins, one of which was delivered at seven months, the other at nine. "And she was indeed pregnant of her beloved son; and the seventh month was at hand; and she brought forth him into light, being deficient the number of months; but kept back the delivery of Alcmene, and restrained the Ilithyiæ." [2]

Homer refers to the pains of childbirth in the following language: "And, as when the sharp pang seizes a woman in travail, piercing, which the Ilithyiæ, daughters of Juno, who preside over childbirth, send forth, keeping bitter pangs in their possession." [3]

The preservation of the dead body at the time of the Trojan war was well understood, and the heroic dead were highly honored. Patroclus, the dearest friend of Achilles, was slain, and the dressing of the corpse was conducted according to the custom of the day:

"But when the water boiled in the sonorous brass, then they both washed him, and anointed him with ointment nine years old; and, laying him upon a bed, they covered him with fine linen from head to foot; and over all with a white mantle." On the next day after this, when "saffron-robed morn was rising from the streams of ocean," silver-footed Thetis came and made a *post-mortem* injection into the body of Patroclus, in order to preserve it.[4]

Πατρόκλῳ δ' αὖτ' ἀμβροσίην καὶ νέκταρ ἐρυθρὸν
στάξε κατὰ ῥινῶν, ἵνα οἱ χρὼς ἔμπεδος εἴη,

"*And then she instilled into Patroclus through the nostrils ambrosia and ruby nectar, that his body might be uncorrupted.*" [5]

[1] Opera, *loc. cit.*, lib. xvi.
[2] Idem, lib. xix., 117, *et seq.*
[3] Idem, lib. xi., 269, *et seq.*
[4] Idem, lib. xviii., 348, *et seq.*
[5] Idem, lib. xix., 38, 39.

ART. II.—*Practical Electro-therapeutics; Galvano-puncture in Abdominal Aneurism, with a Few Cases illustrative of the Electrolytic Treatment of Stricture of the Urethra and of Hydrocele.* By E. L. KEYES, M. D.

A SUCCESSFUL method of treating abdominal and thoracic aneurisms is yet to be discovered. Isolated cases of recovery take place spontaneously, and under all methods, but still the rule remains that no treatment is, as such, really effective, and the prognosis for deep-seated aneurisms of the trunk is fatal, the result being, in the vast majority of cases, only a question of time.

With such a gloomy outlook it becomes the surgeon's duty to try each new method, which seems to promise a fair chance for relief, especially if, by so doing, he does not imperil the patient's life.

Such a method is galvano-puncture. Originating in France (Alph. Guérard), and applied by Pravaz, then by Liston, and then by Pétrequin, in 1845, it was stoutly opposed by many surgeons, among whom Broca[1] stands out prominently in his exhaustive monograph on aneurism. And, notwithstanding the fact so strongly insisted upon by Broca, that a clot formed by artificial coagulation, such as that induced by electricity, must be a passive clot, containing very little fibrine, and, as such, more liable to break down and wash away than to organize, still a few French and Italian surgeons continued to apply the treatment. Bovinet,[2] in a report made in 1853, gave thirty-two cases of aneurism treated. Of these, twenty-one were unsuccessful, one doubtful, and ten successful. Of these ten, seven were situated upon the small arteries of the extremities, and, in the three others, two popliteal and one subclavian, suppuration followed. One of the popliteal cases, moreover, left the hospital with a tumor, as large as a hen's egg, under his knee. Pétrequin has made a more favorable report.

At the present date it is pretty generally admitted that aneurisms of the extremities, or of any part where they can be

[1] Des Anévrismes et de leur Traitement. Paris, 1856.

[2] Mémoires de la Société de Chirurgie, 1853, t. iii., pp. 74, 76, 102.

reached, are better treated by other methods than by galvano-puncture. The use of the latter method has fallen mainly into the hands of the Italians, and is applied by them to the treatment chiefly of thoracic and abdominal aneurisms, these cases being of all the least amenable to ordinary methods of treatment.

Luigi Ciuiselli,[1] in an interesting monograph on aneurisms of the thoracic aorta treated by galvano-puncture—and only relating to such—has tabulated twenty-three cases, of which one disappeared from view, sixteen died, and six are reported cured. Of these six, one relapsed in three months (intra-thoracic of medium volume, De Cristoforis). A second relapsed in seventeen months (intra-thoracic of medium volume, Ciuiselli). A third relapsed in four months, but was again operated upon, and the case reported after eight months, at which time there had been no second relapse (intra-thoracic, De Cristoforis). The other three cases are reported as cures by Machiavelli, Gamberini, Baccelli, at respectively nine and one half months, eight and one half, and four and one half months. Up to these dates, according to report, no relapse had occurred. The literature on the subject of galvano-puncture is large, but there is no object in introducing it here, as there exists the greatest diversity of opinion on some of the most essential points, such as the use of one or many needles; the passage of one, the other, or both currents, into the tumor; passing a large or small amount of electricity; coagulating at once, or only starting a point of coagulation, etc. On these points I have preferred to be guided by the result of experiments on dogs.

The Italian surgeons, who have done the most with the method, use the voltaic pile, composed of a large number of large plates, moistened by a mildly-acidulated fluid. They introduce a moderate number of needles, and pass both currents through each needle for ten or fifteen minutes, changing the poles from one needle to the other.

Dr. Sands's operation in the New York Hospital, in March, 1869, upon a case of subclavian aneurism, a thesis which ap-

[1] Sugli aneurismi dell' aorta toracica finora trattati colla elettro-puntura. Milano, 1870.

peared shortly afterward by Dr. Allan McL. Hamilton,[1] and some operations by Dr. Guleke, have served to excite the interest of the profession in this city, and to act as an incentive to new efforts in the same direction.

The object of the present communication is to throw a little more light, if possible, upon this method of treatment, and to report what has been observed in experiments made upon dogs, and as the result of operation in the human subject.

In March, 1871, on taking charge of Ward Four, Charity Hospital, I found a widow of forty-two (Bridget Dillon), who informed me that she had been on her back for nine months, and had a "swelling in her stomach." She was thin and anæmic, but said she had always been healthy, with the exception of a few colds. Her father, his only brother, and only sister, all died of consumption. Her mother was healthy, as were all her immediate connections at date. Patient never showed signs of any venereal infection. She had two children; one died in childhood, the other is alive and healthy.

The patient had been occupied about the hospital as a scrub-woman, when a little pain and a small swelling in the abdomen caused her to enter one of the wards as a patient. This was in September, 1869. A small, pulsating, movable tumor was then found, and diagnosed as aneurism. In February, 1870, the tumor had reached about the size of a French chestnut, was very movable, manifesting expansive pulsation, and a double bruit. It was diagnosed as aneurism of superior mesenteric. The patient was seen by several medical gentlemen from time to time, a diagnosis of aneurism being always made. No systematic course of treatment was undertaken. For the first three or four months after the tumor was discovered it did not advance much, and she kept up and about. After that time she took to her bed, where I found her. Since September, 1870, the tumor had been rapidly increasing, and the patient had emaciated and lost strength with proportionate rapidity, so that in March, when I first saw her, the tumor was as large as the fist, situated a little to the left of the median line, extending somewhat below the umbilicus, and lost above

[1] Galvano-puncture applied to the Treatment of Aneurisms. 1870.

under the cartilages of the ribs. The semicircumference was four and a half inches vertically, three and a half inches transversely. The patient was very thin, and there was little or no fat in the abdominal walls. The tumor could be grasped in the hand, and freely moved from one side of the abdomen to the other. It lifted the abdominal wall, and a heaving pulsation was distinctly visible to the eye. The lower part of the tumor was hard, and, although strongly pulsating, manifested no thrill. A loud, double sound was heard over the whole tumor, the upper part of which could be felt to thrill and tremble at each pulsation. Here the walls were evidently very thin. A piece of small intestine could be slipped up and down over the lower end of the tumor, but no intestine could be made out over the top of the pulsating mass. Large enemata of warm water and of air were given in order to trace out the course of the colon, but in no case could that tube be made to override the tumor.

Pulsation seemed to be a little stronger in the right than in the left femoral artery. The heart-sounds were feeble but natural. Evidences of a little thickening were found in the lungs, but no disease. No further examination was instituted. There was *no swelling at the back, nor any pain on pressure.* The only subjective symptom was a slight pain in the epigastrium to the right of the tumor, which was greatly increased on getting up and trying to move about. *There was no pain in the back.* Food could be taken in small quantities, while the patient was lying, without exciting any nausea, but the reverse was the case in the erect position. There was no appetite, and obstinate constipation had been of long standing. All her symptoms have been growing rapidly worse of late. No evidences of kidney-disease.

The rapid increase of the aneurism for the last few months, and the failing strength of the patient, seemed to demand some active measures for relief. I believed the aneurism to be a saccular aneurism (forward) of the aorta.

At a consultation of the majority of the physicians and surgeons of the Charity Hospital, and of many professional gentlemen not connected with the hospital, unanimous assent was given to the proposition of attempting the cure of this

case by galvano-puncture, no other treatment seeming possible. The patient was thoroughly examined, but nothing new discovered.

In consulting various authors to discover the best mode of operating, I found that no method was agreed upon as being the best, every operator differing more or less from all others. As experiment furnished the only means of arriving at just conclusions, I undertook a series of vivisections upon dogs, which I will briefly detail, as they represent the result of honest endeavors to find out something, and were not undertaken to establish any preconceived theory:

Experiment I. *March 17th.*—A small dog was etherized, the abdomen laid open through the linea alba and the aorta exposed. Positive and negative needles, insulated (imperfectly) with hard rubber, were introduced into the aorta about one inch apart. Both needles were of steel, gold-plated at the points. The negative needle was accidentally run through the artery, and emerged into the muscle beneath. The current from sixteen cells of a Stöhrer's battery was passed for ten minutes. The artery was not compressed. Blood flowed through it at full force.

Result.—Bloody foam surrounded negative needle, the blood emerging from the artery. Needle loose. It dropped out, and blood followed.

Positive needle adherent to artery, requiring a little force to pull it away. Artery was cut, before the needle was removed, to look for clot. No clot discovered in the vessel. A little black material was found adherent to the wall of the artery, and to the positive needle at its point of entrance. The lining membrane of the artery was altered and discolored, wherever either needle had touched it, over a space about one and a half line in diameter.

Experiment II.—Another small dog was operated upon, the conditions being exactly the same as in Experiment I., except that platinum needles were used (poorly insulated with hard rubber), and thirty-two instead of sixteen cells were employed.

Result.—The outside of the artery was covered with blood, which clotted into a black mass around the positive

pole. Bubbles at negative pole. Inside: No clot. Positive pole tight; negative loose. Exactly same appearances as in Experiment I.

Experiment III.—Very large dog. Conditions same as in Experiment II., except that current was passed for thirty minutes (thirty-two cells). Artery unobstructed. No clot. A thick black clot was found outside the vessel at point of entrance of positive needle, and outside the vessel at an opposite point where the needle had touched but not penetrated the vessel-wall. Inside, a little similar black material, loose. Vessel-wall eroded over both points of contact of positive needle for space three-sixteenths-inch diameter. Positive needle tight; negative needle loose. There was also a little loose whitish material filled with bubbles lying in the vessel. The lining membrane was softened and altered in appearance at point of entrance of negative needle, more than at similar point of positive needle. At positive pole it seemed to be compressed and condensed, at negative it was soft and loose.

In all of these experiments the needles were about one millim. in diameter, but imperfectly insulated, and it was found impossible to keep the outside of the artery free from blood, which escaped in Experiments I. and III. alongside of the negative needle during the passage of the current. The force of the flow of blood in the unobstructed artery was probably too great to allow a clot to form.

A second set of experiments was undertaken March 24th.

Experiment IV.—Medium-sized dog etherized. Positive needle platinum, insulated with hard rubber, was placed in the artery. Negative needle platinum, insulated with shellac, in muscles near the spine. Eighteen cells Stöhrer. Time ten minutes. Current of blood about three-fourths arrested through the artery, by compression with thumb and finger, one inch above and below the needle.

Result.—Firm, black clot outside of the vessel at point of entrance of needle, and where the opposite wall was touched by the needle's point. Inside: firm, black clot adherent to the wall, but not large enough to obliterate the vessel. Lining membrane of artery blue-black, and coats of vessel adherent and condensed at point of entrance of needle, and

where opposite wall had been touched. Needle not much acted upon. A little flake of hard rubber came off, and was left attached to the clot. A few bubbles of oxygen escaped from the vessel alongside of the needle.

Experiment V.—Positive steel insulated with shellac in artery. Negative platinum outside. Twelve cells Stöhrer. Time thirteen minutes. Artery partially compressed, as in Experiment IV.

Result.—Same as in Experiment IV., except that needle was more acted upon. There was no escape of gas. Needle adhered to artery. It was drawn out before latter was cut. No hæmorrhage. Opening into artery was jagged and rough. Shellac came off softened. Same amount of clot and of injury to lining membrane.

Experiment VI.—Positive steel, insulated with hard rubber. Eighteen cells. Time ten minutes. Appearances same as in Experiment IV. (all conditions were also the same). Hard rubber did not come off.

Experiment VII.—Positive needle gold, non-insulated. Negative needle steel, non-insulated. Both in vessel. Sixteen cells. Time ten minutes.

Result.—Clot same at positive pole as in Experiment IV., but action on lining membrane was much less than in that experiment. Gas escaped at negative needle. No clot at negative needle. Artery compressed only below, circulation arrested.

Experiment VIII.—Positive needle steel (shellac) in vessel; negative outside. Eighteen cells. Time five minutes. Compression only below (complete).

Result.—Same as in Experiment VI., except that size of clot was less. Action on vessel-wall apparently equally extensive.

Experiment IX.—Positive needle was a steel (hollow) hypodermic injection-point (shellac) in artery. Negative outside. Pressure below. Eight cells. Blood flowed through the needle in small stream for eight and one half minutes, forced through by the heart's action. Ten minutes after introduction, canula was removed. Free bleeding followed from point of puncture. Small, non-adherent black clot was found

in the vessel. Vessel-walls but slightly acted upon, shellac not visibly removed from needle. Every thing seemed to indicate that a small amount only of the galvanic current had been at work.

Experiment X.—Positive needle gold, non-insulated in vessel. Negative outside. Eighteen cells. Compression below. After nine minutes the needle was accidentally pulled out. No bleeding occurred. Small black clot in vessel adherent. Lining membrane as before.

Experiment XI.—Renal artery of dog was cut, and blood allowed to flow into peritoneal cavity. As it flowed, negative and positive steel non-insulated needles, connected with eighteen cells, were dipped into it. Action commenced at once. A dark clot formed about positive needle, and a light foam around negative. At the end of one minute at the positive needle a black clot had formed a quarter of an inch in diameter, dense enough to be lifted out of the fluid on the point of the needle, and to sustain its own weight. At negative needle there was a spumous, yellow mass, which could be lifted in part from the blood on the needle's point, but which had no consistence whatever.

Experiment XII.—In experimenting on a solution of albumen in water, I found that with six cells I obtained a tough, laminated deposit of albumen around the positive pole in one minute, where that pole was composed of gold, brass, or copper (gold being most effective), and this irrespective of the metal used to form the negative pole. When the positive pole was of steel, on the contrary, six cells for five minutes would not precipitate the albumen in the same solution. It took ten cells to get any precipitation at all. With six cells, however, the steel at positive pole became oxidized, and colored the solution in its vicinity brown. From this experiment, finding that the power of coagulating albumen was possessed by metals at the positive pole directly as their conductibility of heat, I was led to conclude that the thermal element had something to do with causing coagulation.

Experiment XIII.—I found by experimenting with raw beef that the shellac insulation became softened and detached

by passing a strong current through the needle for a long time. This did not take place with hard rubber.[1]

Dr. G. M. Beard rendered me important assistance in all the vivisections, as well as subsequently in all the operations on the patient, for which I desire to return thanks.

From the experiments above detailed I arrived at the following conclusions:

1. A pretty firm, black, adherent clot can be formed about the positive pole, if the force of the current of blood in the vessel is retarded.

2. No such clot, or but an insignificant quantity, is formed about the negative needle. No more clot is formed, when both needles are in the artery, than when positive is in and negative out.

3. The positive needle leaves a jagged, dry, impervious opening in the arterial wall.

4. The negative needle leaves a soft, patulous opening in the arterial wall.

5. The lining membrane is acted upon as much or more by the negative pole than it is by the positive.

6. A hollow needle does not convey the current as well as a solid needle.

7. Gold seems to form an equally good clot, and to act less upon the arterial wall, than any other substance experimented with.

8. Gold will form a clot with a smaller current than will any of the other metals used.

9. Shellac is not as good an insulating substance as hard rubber.

10. It is expedient if possible, in operating on the human subject, to insulate the needles well, and have the insulating material extend just within the wall of the vessel, so as to act upon the latter as little as possible.

[1] The shellac I used was the preparation mentioned by Dr. Allan Hamilton in his thesis, page 10. It was prepared for me by Mr. Spangenberg, but was solid on my receiving it, so that it had to be melted before it could be applied to the needles. Dr. Hamilton informs me that it must have been improperly prepared, as it should remain fluid. This would account for my lack of success with this agent.

Having arrived at these conclusions, I endeavored to find out how strong a current I could get out of sixteen cells of Stöhrer's battery, charged with a little excess of sulphuric acid over the ordinary solution used. Ciuiselli (*op. cit.*) states that a battery properly charged should decompose a solution of sulphuric acid and water (one-thirtieth of the former) at such a rate that two or three cubic centimetres of the combined gases (H O) would be produced in five minutes. Testing my battery in decomposing such a solution, I found that five cubic centimetres of the gases were evolved from the two poles in five minutes from eight cells. From sixteen cells 19.84 cubic centimetres were evolved in the same solution in the same time. This test I find works irregularly, and varies from day to day with same number of cells. It is unreliable.

In deciding upon a needle I selected gold, since Mr. Stohlmann assured me that a gold needle (eighteen carats) could be made one millim. thick, hollow except for the last half inch, which would penetrate the skin and ordinary fibrous tissue. This assurance proved unreliable, however. Two such needles were made, but, on attempting to introduce them, one broke in endeavoring to make it penetrate the skin. The skin was then cut, but the other needle bent, and would not enter the tumor. Consequently the operation had to be put off.

The needles next made were of steel, one millim. thick, triangular at the point, with cutting edges. The needles were two inches long, a little less than half an inch at the point was left non-insulated, and this was very heavily plated with gold. This point was solid. The rest of the needle was hollow, and a small opening was made at the side just below the hard rubber. The latter substance was applied rather thickly by roughening that part of the needle which was hollow, heating it (and the hard rubber), and running on as thick a coat as was desired. This insulation always proved satisfactory. It did not become detached in any instance. The object of having a hollow tube was that blood might flow from the needle as soon as it reached fluid, and that at such a time the wall of the aneurism would be known to be in contact with the insulating material, and might thus escape injury, which would otherwise necessarily be inflicted. The heavy gold plating was

employed so as to obtain as much good effect as possible from the contact of that metal with the blood to be coagulated. The only other point to determine was, as to the probable amount of inflammation of the peritonæum which would follow the passage of the needle and the electricity through its two coats. On this subject I could get no light. Needles without number had been passed through the peritonæum, but in no case, that I could discover, had electricity been so passed, except in Dell' Acqua's case. This case of Dell' Acqua's is the only one on record, as far as I can discover, where an abdominal aneurism has been treated by electro-puncture. It reads briefly as follows: [1]

"An Italian nobleman had an aneurism of the cœliac axis as large as an orange. Galvano-puncture was decided upon. The voltaic pile was used. Three steel needles were introduced into the most prominent part of the tumor, two above and one below, so as to form an equilateral triangle. The current from the positive and negative pole was passed successively through each needle, the object being to coagulate the tumor *en masse*. The battery was in action during forty minutes. The patient complained greatly before the operation was over, and demanded chloroform, which had not been given at first. Partial anæsthesia was produced. After the operation, the patient (being still under the influence of the chloroform) executed some rapid and violent contractions of the abdominal muscles, which caused violent flexion of the trunk. He was not properly restrained, and the tumor was observed to diminish rapidly in volume. The patient quickly died. On *post mortem*, it was found that the aneurismal sac had ruptured during the patient's muscular contractions—not where the needles were introduced, but behind, through the thinnest part of the wall of the sac. No continuous clot had been formed between the points of entrance of the three needles, but at each point there was a 'whitish, straw-colored mass of coagulated fibrine,' about one and a half centimetre in diameter."

This appears to have been the only case of abdominal aneurism operated upon, previous to the one which forms the

[1] Gazzetta Medica Italiana-Lombardia, No. 28, 1870, p. 217. Dr. Felice Dell' Acqua.

subject of this article. I am at a loss to account for the whitish masses of fibrine. In my experiments all the clots were black. This case threw no light upon the effect of the current on the peritonæum.

March 30th.—The patient, having taken a cathartic on the night previous, and had the bowels thoroughly evacuated by an enema at noon, was brought under the influence of ether at 2 P. M. A hollow steel needle (previously described) was introduced slowly, until blood flowed from its hollow end, and then the negative electrode (a silver plate covered by sponge moistened in salt water) was applied to the skin over the opposite point of the tumor. The needle was introduced at the middle of the right side of the aneurism. The current from eight cells was applied. Many gentlemen of the medical and surgical staff of the hospital assisted at the operation. On the theory of arresting the current of blood, if the tumor was a saccular aortic aneurism, Drs. Wood, Sayre, and Mason, applied digital compression to the aorta below the umbilicus. The blood ceased to flow from the needle after the current had been passing for two minutes. In eight and a half minutes a faint bluish mark could be seen on the skin encircling the needle. The current from twelve cells was now passed for one minute, for one minute more from sixteen cells, and the needle withdrawn. It was firmly adherent. No blood followed. The tumor was not manipulated, but the bruit, through the stethoscope, seemed fainter than it had been. The patient was ordered eggs, milk, whiskey, iron, and quinine. Six drops of Magendie's solution were thrown under the skin. The gold was gone from the needle. Hard rubber unchanged.

The patient suffered a good deal of pain and prostration after the operation, the latter due, I believed, to the ether, the former to the manipulations used in endeavoring to compress the aorta. The tumor increased in size laterally, during the following days was very painful at the point of introduction of the needle, where it remained soft, but elsewhere it became unmistakably harder. At the point of insertion of the needle, a circumscribed swelling could be felt, growing out from the tumor into the abdominal cavity, one inch wide, three-quarters of an inch high. The bowels acted on the third day, and after

the sixth day there were constantly less pain and nausea. An oval very superficial slough came away from point of insertion of needle, one line by one and a half line.

April 6th.—With the battery recharged, so as to yield, in the sulphuric-acid solution employed before, 46.56 c. cs. of hydrogen and oxygen, in five minutes, two needles were introduced, three-quarters of an inch apart, at the base of the projection which had grown after the first operation. The patient was prepared as before, and the negative pole applied in the same manner. One needle was hollow like the one previously used, the other resembled it in all respects except that it was solid. The hollow needle was introduced until blood flowed through it, then the solid needle was introduced to the same depth. Current from twelve cells passed five minutes through hollow needle. Blood ceased flowing after two minutes. At the end of five minutes the current from sixteen cells was passed through the same needle for ten minutes more, and the needle withdrawn. One or two drops of dark blood oozed out. Discoloration of skin to same extent as after first operation. The current from sixteen cells was now passed through the solid needle for ten minutes. Action on the skin more intense than with the other needle; a drop or two of blood flowed on withdrawal of the needle. The solid needle had been much more acted upon by the current than the hollow one, being nearly eaten off at non-insulated portion. Aorta was not compressed, as the manipulation seemed to harm the patient at the first operation and as the belief was gaining ground that the superior mesenteric was involved in the tumor. Just before the needles were introduced the tumor possessed two loud murmurs. Immediately afterward there was but one faint sound to be heard. ♏ 6 Magendie, subcutaneously.

The patient suffered less after this than after the last operation, but was much prostrated by the ether. Bowels were moved on third day. Tumor enlarged a little laterally to the right. At the end of a week, patient seemed to suffer from a sort of reactionary fever, which lasted three days. The tumor measured five inches vertically (increase of half an inch in a month), four and a half transversely (increase of one inch). It

is, however, manifestly solidifying. Two sounds can be heard only at isolated spots. On April 27th, patient had a chill, and urinated frequently, but in small quantities. Sp. gr. 10.16. Some pus. A little albumen. No casts. The skin sloughed at points of insertion of needles a little more positively than after first operation.

May 4th.—Six solid steel needles, with triangular cutting gilded points, non-insulated for one and a quarter inch, one and a half millim. thick, and three inches long, were introduced to a depth of two inches, being placed so as to surround the tumor in an oval. Three needles fastened together were attached to the positive wire of the battery before used, yielding, with sixteen cells, forty-six and a half cubic centimetres in one minute (five times as powerful as before). The negative electrode was placed (moistened) upon the skin near by. The other three needles together were attached to the positive pole of another battery, of seventeen cells (with larger plates), which yielded ninety-three cubic centimetres of the gases in one minute, negative pole near by. After passing the current for twenty-eight minutes no blackening of the skin was observed, but the needles were specially well insulated. The batteries were now changed, the seventeen cells being attached to the three needles, which the other battery had been attached to, and *v. v.* The current was now passed for thirteen minutes more—in all forty-one minutes. No compression of aorta. No blood followed extraction of needles. Six black spots marked their points of entrance. A good deal of pain followed this operation, but on the whole the condition was similar to that after the others. On May 5th, only one sound could be heard (and that faintly) over the lower part of the tumor. The mass is very hard, but there is still expansive pulsation, though much less marked than formerly.

June 22d.—General condition immensely improved. Patient gets up and dresses herself. Pains gone; appetite fair; strength greater, little if any nausea. Tumor quite hard; pulsation slightly expansive. One sound only to be heard at the lower end of the tumor. Two batteries used as in last operation. Eleven needles, one and half mill. thick, three and a half inches long, non-insulated for one and a half inch,

were introduced two inches. Six needles were attached to one battery (pos. pole) and five to the other. The needles surrounded the tumor in oval. The current was passed for one hour and five minutes, the batteries being interchanged after the first half hour. Aorta was not compressed. There was less shock from this operation than from any of the others, and the patient seemed to improve in most particulars. The tumor got no smaller, but it certainly became harder, and it was with difficulty, toward the end, that any murmur at all could be heard. However, the patient continued to become more and more weak, and finally died of exhaustion on the 18th of July.

I was absent from the city at the time of the patient's death, and consequently was not present at the autopsy, which, however, was carefully conducted by Dr. Drake, of the then house-staff of Charity Hospital, to whom I am much indebted for unremitting care bestowed upon the patient during all the period of the operations.

At *post mortem*,[1] twelve hours after death, the lungs were found to have some fibrous nodules and old pleuritic adhesions at the apices. Liver was small but healthy. Spleen enlarged and slightly waxy. Kidneys small but healthy. Heart very small, no valvular lesions. Walls of left ventricle enormously hypertrophied. The lining membrane of the aorta, from the semilunar valves to the bifurcation, had lost its polish, was of a darkish color and somewhat roughened, indicating chronic inflammation. There were a few small spots of atheroma scattered along the artery. From the posterior wall of the arteria innominata sprang a round saccular aneurism, about twice as large as an English walnut. This aneurism was perfectly solid, filled with a firmly-organized clot, which projected to some extent into the lumen of the aorta. The innominata was pervious. Opposite the sixth and seventh dorsal vertebræ was found another large aneurism of the aorta. It also was saccular backward, and had a circumference of eleven inches. This aneurism was also filled with firmly-organized clot, portions of which jutted out into the aorta. The pressure

[1] The specimen was exhibited at the Pathological Society, October 25th, and was subsequently placed in the Museum of Charity Hospital.

of the aneurism had eroded the bodies of the sixth and seventh dorsal vertebræ nearly down to the canal. The posterior wall of the aneurism was gone, and the clot at this point softened and broken down.

Finally, the aneurism which had been operated upon was found to spring from the front wall of the aorta, just at the organ of the superior mesenteric, and to involve the front aortic wall in a saccular manner, while the superior mesenteric issued from the tumor at its apex. A portion of the duodenum lay over the apex of the tumor. The lesser curvature of the stomach followed the left border of the tumor. The two peritoneal surfaces were attached at the points of entrance of the needles by lymph, which was more or less firm according to the date of the puncture. The duodenum had escaped puncture by a quarter of an inch, and the stomach by three-quarters. When the two peritoneal surfaces were separated, little oval, shallow depressions (similar to what had been observed on the lining membrane of the aorta in dogs) were observed, marking the points of insertion of the needles. These were more pronounced on the parietal than upon the visceral layer. This aneurism was twelve and a half inches in circumference, and felt, when removed, nearly solid. On being opened, after having been soaked in alcohol for some weeks, it was found to be about three-fourths filled with a firmly-organized, stratified, light-colored clot, exactly resembling that found in the other aneurisms. Centrally there was a cavity filled with a dark-colored thick blood. On separating the circumferential layers of clot, the dark central spot which marked the point of insertion of the needle, on the skin as well as on both layers of the peritonæum, could be traced down from layer to layer.

There was no appearance of any concentric arrangement of fibres about these dark spots, nor was the clot here any harder, nor did it differ in any appreciable way from the clot elsewhere, nor from the clot of the other aneurism. In other words, physical examination of the tumor showed no evidence that any special action had taken place in the aneurism at the points punctured by the needles. Had there been no other aneurisms found, the clot in this one would have been referred to the action of the current entirely, but it is difficult to as-

cribe any effect to the latter, where no positive evidences of such effect can be observed. The aneurism operated upon was the only one of the three not entirely solidified; but this may be accounted for by the fact that a current of blood ran through this aneurism to supply the superior mesenteric, while the other two were purely saccular, and entirely out of the course of the current. That the murmurs were less intense after the operation than immediately before, is undoubted, as is the other fact, that the walls of the aneurism were excessively thin before the first puncture, and became progressively very much thicker at each succeeding puncture. I do not feel myself in a position to decide whether this was coincidence or effect. It is certain that the subjective symptoms of pain and nausea disappeared in proportion as the tumor solidified. Dr. Beard expressed it as his opinion that more needles and a more powerful current should be used.

This operation, then, being the first of the kind which has been performed upon an abdominal aneurism where the results could be studied (Dell' Acqua's case died on the table), permits, I think, the following conclusions:

1. A good-sized needle (insulated) and a powerful galvanic current may be passed through the peritonæum without exciting general peritonitis.

2. More electrolytic action is exercised upon the solids and fluids of the body through a solid than through a hollow needle.

3. Some electrolytic action upon the tissues takes place in spite of any ordinary amount of insulation, but is greatly modified by it. Action upon the wall of the aneurism consequently cannot be avoided, and it is unnecessary to employ hollow needles for the purpose of not applying the current until fluid blood is reached.

4. The danger of operating on abdominal aneurism by galvano-puncture is so insignificant that the attempt to treat by this method is justifiable.

Finally, one of the points of greatest interest in this case is, that by far the most serious aneurism gave no sign of its existence. The patient never complained of any pain in the back after I saw her, nor gave any indication of distress at the

sixth and seventh dorsal vertebræ, nor was there any swelling at this point. Consequently no examination was ever made, by myself or by any of the other gentlemen who had the patient in charge, to search for other aneurisms, and the two passed undetected until the autopsy.

ELECTROLYSIS IN ORGANIC STRUCTURE.

A thesis, which fell into my hands on the above subject, by Francisco Campos Bautista,[1] a pupil and follower of Mallez and Tripier, represented the matter in such a winning light, and gave so many cases, where stricture had been cured and not relapsed after many years, that I was induced to put the matter to trial; notwithstanding the fact that the method of Mallez and Tripier had not gained the confidence of surgeons, and consequently did not probably come up to its pretensions.

I operated upon ten patients, and from that amount of experience cannot but condemn the method *in toto*. For those who may be interested in the subject, I will briefly detail my experience with the cases.

The theory of the treatment as stated is briefly as follows: That, as alkali is found at the negative pole, and acid at the positive, any slight slough produced by the former will behave like a slough produced by a caustic alkali, and that the cicatrix resulting therefrom will be soft and non-retractile, while the cicatrix left by the positive pole will be retractile, like that left by acid or by a burn.

The method, as stated, is to pass an insulated negative electrode to the stricture, and to bind the positive electrode to the thigh, then to pass a mild galvanic current, such as the patient can endure without suffering inordinately, and to hold the electrode in position until it passes through the stricture, and the insulating sheath can follow, and be pushed over it. If this result do not occur in fifteen or twenty minutes, time is given for the slough, which has been formed, to separate, and then the operation is repeated, and so on, until the stricture has been overcome. The slough separates anywhere from the fifth to the twelfth day, according to its size. No after-treat-

[1] De la Galvanocaustique chimique comme moyen de traitement des rétrécissements de l'urèthre. Paris, 1870.

ment is necessary, it is claimed, although bougies introduced to explore the condition of the stricture do no harm. Sometimes no appreciable slough comes away, but yet the urethra, it is said, becomes and continues enlarged at the constricted point. So many operations are necessary as will allow a full-sized instrument to pass without being grasped by the stricture—then the cure is complete—truly a pleasant picture!

In the first two of the following cases an instrument, similar to that employed by Mallez and Tripier, was used, essentially a No. 8 English yellow, woven tube, open at both ends, and a silver wire run through the same, with an olive-shaped, longish extremity, small enough to be withdrawn into the canal of the insulating tube. This instrument was well enough where the stricture was very tight, but did not answer where there was only a slight diminution in the size of the urethra. Consequently, I had an instrument constructed to meet all cases, and it was used on nearly all the patients upon whom I operated. It was made like an ordinary sound, size No. 7. A metallic wire, with a screw on the end, ran through the hard rubber of which the instrument was composed. Upon the projecting screw could be fastened oval steel balls (nickel-plated) of various sizes, all perforated, so that they could be threaded over a whalebone bougie, and followed upon it as a guide into the bladder. In fact, the instrument was like a modified bulbous sound. Stöhrer's battery was used.

All of the patients, with one exception, were treated at Charity Hospital.

Case I.—D. F., aged forty, general health excellent. First gonorrhœa at twenty-second, second at thirty-eighth year of age. Stream became gradually reduced until January 11, 1871, at which time he had complete retention for fifteen hours, relieved by hot baths. The patient entered the hospital, and was treated by dilatation.

February 6th.—Examination detects the following strictures (orifice admits 14 easily): At orifice, stricture (linear) arresting No. 14 soft bulbous sound. At two and a half inches, stricture (linear) arresting No. 12. At five inches, stricture, $\frac{1}{8}$ inch long, arresting No. 9. Current from 10 cells was passed

through second stricture for five minutes. A good deal of pain complained of. Current from 10 cells was passed through lower stricture for ten minutes.

No. 12 bulbous sound passed easily into the bladder after the operation.

March 4th.—No slough has been passed. No. 9 steel sound is grasped by strictures.

March 15th.—(Using my own instrument with steel bulb 15½.) Stricture at orifice; 15 cells; five minutes; bulb passed. Stricture at two and a half inches; 16 cells; ten minutes; bulb passed. Stricture at five inches; 16 cells; thirteen minutes; bulb passed. A little blood was lost at this operation, and a good deal of pain was felt afterward. No slough was passed. The orifice swelled, and became hard and inflamed. Patient refused to follow up the treatment, or to be examined further.

Case II.—M. S., thirty-five, under treatment for papular syphilide. First gonorrhœa twenty-two years ago, second attack four years ago. One year and a half ago retention relieved by silver catheter. No. 9 plain steel sound passes with difficulty a dense stricture at four and three-quarter inches.

February 6th.—Current from 16 cells passed for ten minutes. Great pain toward the end of the operation. After the operation No. 11 plain steel passed readily into the bladder. Frequent micturition and much pain followed.

March 4th.—No. 12 plain steel passed into bladder, and was not strongly grasped by stricture. At this date patient suddenly left the hospital.

Case III.—*February* 21, 1871.—J. W., twenty-three, single, has had four attacks of gonorrhœa, first attack in 1866. Orifice takes 11 (balanic hypospadias exists). Stricture at three and a half inches arresting No. 4 bulbous sound. Stricture at six inches only admitting filiform bougie.

(In this and all succeeding cases I used my own instrument.)

Steel bulb 6; 12 cells; passed first stricture in one minute. Steel bulb 8; 12 cells; passed first stricture in one minute. Steel bulb 8; 12 cells; passed second stricture in one minute. Not much pain. Some blood flowed.

March 4th.—No. 6 steel sound passed first stricture, but is arrested by second stricture. No slough has passed.

March 15th.—Second operation. Steel bulb 8; 12 then 18 cells; eight and a half minutes; first stricture. Steel bulb 8; 16 cells; five minutes; second stricture.

April 2d.—No. 6 steel sound will not pass second stricture. No. 8 steel bulb passes readily on its conducting whalebone without current. Probable fold in urethra in which steel instruments catch. Passed current for five minutes through bulb 8. Patient disappeared.

Case IV.—*February 19th.*—J. H., thirty-two, fourteen years ago, had gonorrhœa which "has lasted ever since." Retention in October, 1870, while at sea. Catheter would not go, consequently a piece of wire was passed into the bladder. Relief followed. Orifice takes No. 6. Stricture at two and a half inches admitting No. 3, which would not pass. Steel bulb 6; 6 then 12 cells; twenty-five minutes. Inordinate complaint of pain was made. The stricture could not be passed.

March 3d.—Patient passed a cast of the urethra one quarter of an inch long, the wall of the shed tube being about one line thick. Stream larger, but still only filiform bougie could pass the stricture.

March 17th.—Bulb 6; 16 cells; three minutes; then 10 cells; four minutes; without passing stricture. Patient complained bitterly, and refused to allow the current to be passed for a longer time.

April 2d.—Sloughy portions of tissue have come away. No. 6 steel sound passed into the bladder. Patient refused further operation, and left the hospital.

Case V.—J. A., aged forty. Two attacks of gonorrhœa in 1856 and 1869. Orifice admits 18. Double linear stricture in first half-inch admitting 13 bulbous sound. From one and a quarter to six inches from the meatus the whole urethra is stiff and rigid. It grasps No. 13 steel sound throughout. At six inches a short stricture exists, through which No. 11 passes into bladder.

February 21, 1871.—Steel bulb 15½; 6 to 16 cells gradually increasing. First stricture passed in one and a quarter minute. In half a minute more lowest stricture was reached. In half a minute lowest stricture was passed. Some blood followed.

March 4th.—Steel sound No. 15 passed into bladder. No. 16 was grasped and would not go. Patient left the hospital.

Case VI.—T. S., aged thirty-five. Gonorrhœa in 1854, 1858, 1870. Orifice takes 19. In first half-inch, linear stricture admitting No. 13 bulbous sound. At one and three-quarters inch, stricture one and a quarter inch long, admitting No. 9. At four and a half inches, stricture admitting only filiform bougie.

February 21st.—Steel bulb No. 6, with 12 cells, passed into the bladder in one and a quarter minute without much pain. Testicle swollen. Patient declared he was no better, and persistently refused another operation, or even to have an exploring instrument passed. He left the hospital in April.

Case VII.—T. F. P., aged sixty. Gonorrhœa at eighteen, another at twenty. In 1836 he entered a hospital to be treated for stricture, and was gradually dilated to 12. In 1860 forcible dilatation was practised under chloroform. He neglected to pass instruments for himself, and had to be treated again in 1864, this time by gradual dilatation. Since then he passes No. 3 soft bougie "every time he makes water," but he does not pass it into the bladder. On examination I find stricture commencing at two inches from meatus, and continuing indefinitely, as far as could be ascertained. Only a No. 3 bougie could be passed into the bladder. Urethra feels (outside) like a fibrous cord.

March 16th.—Steel bulb 6; 16 cells; 20 minutes; no progress; battery seemed very weak.

March 18th.—Battery stronger; bulb 6; 16 cells; 12 minutes; no progress. Patient refused further efforts.

Case VIII.—J. W., three attacks of gonorrhœa, the first ten years ago. Orifice takes No. 17. In first half-inch, stricture admitting No. 15. At five and a half inches, stricture one inch long, admitting No. 10.

March 15th.—Bulb 15½; 16 cells; five and a half minutes; passed first stricture. Bulb 15½; 16 cells; nine minutes; passed second stricture.

April 2d.—Orifice rigid and tightly contracted; no slough has passed. Orifice will only take 12, and that with pain. Passed current from 16 cells through stricture of the orifice for

fifteen minutes. Orifice became more painful and contracted, and the patient refused all further efforts.

Case IX.—T. W., aged forty-nine. Three attacks of gonorrhœa, the first at the age of twenty-one. Patient treated himself in 1862, and, after that date, with bougies. In 1870 internal urethrotomy was performed, and No. 19 passed into the bladder. Orifice admits No. 19. Stricture in first half inch admitting No. 15. At two and a half inches, stricture arresting No. 16. At six inches, stricture one-quarter inch long, admitting No. 12.

March 15th.—Bulb 15½; 16 cells applied to first stricture for twenty minutes. Bulb 15½; 16 cells applied to second stricture for five minutes. Bulb 15½; 16 cells applied to third stricture for five minutes.

April 2d.—No slough. Orifice painful and hard; only No. 9 will pass through it.

April 4th.—Incised orifice up to No. 19. Passed current from 16 cells through second stricture for five minutes with bulb 15½, and through third stricture for fifteen minutes. Patient experienced no relief, became steadily worse, and finally subjected himself to another cutting operation.

Case X.—D. W., aged fifty-six. Was treated by dilatation some fifteen years ago, and has occasionally passed instruments for himself since that time. Orifice takes 18. First half inch, stricture admitting No. 15. At three and a half inches, stricture admitting No. 10. At five inches, stricture admitting No. 4. At six inches, No. 4 again detects a slight obstacle.

April 18th.—Bulb 6; 10 cells; eighteen minutes; through two lower strictures. A little pain. Blood followed.

May 2d.—Bulb 6 passes into the bladder without the use of the current. No slough. Bulb 8; 12 cells; fifteen minutes through lower strictures.

May 16th.—No slough. Bulb 8 passes with a little delay into the bladder without the use of the battery.

Bulb 15½; 16 cells. In ten minutes the instrument had passed all the strictures and entered the bladder. No current was passed through stricture at orifice.

May 30th.—No slough. No. 15½ bulb will not pass second stricture. Passed current from 16 cells for twenty min-

utes. After ten minutes the instrument could be passed, with a little urging, into the bladder.

June 14th.—No slough. No. 15½ bulb resisted at second stricture, but passed into bladder after fifteen minutes of current.

June 27th.—No slough. No. 15½ bulb still resisted. Passed current for fifteen minutes. Patient agrees with me in being tired of the treatment. He promised to report subsequently, for inspection, but failed to appear.

I have given the above cases in general detail, so as to show to what extent the method was tested. The results may be summed up as follows:

Organic strictures may be widened by the passage of the negative current; sometimes a slough is produced, but not invariably. Recontraction takes place, as a rule, after this as after all other methods—remaining away for a longer or shorter period in different cases. Sometimes it appears as if the urethra became continuously wider at the constricted portion (Case II.) after the operation, but in the above cases no patient could be followed sufficiently long to make such an observation valuable. The operation is disagreeable to the patient, often very painful. The pain sometimes lasted several days, and vesical symptoms were always aggravated where they pre-existed.

The method does not seem to be attended with any considerable danger, although peri-urethral abscesses have been reported after its employment. It seems to be absolutely inapplicable to strictures at or near the urethral orifice.

Symptoms are not relieved rapidly nor in proportion to the pain of the operation. Patients consequently prefer gradual dilatation, or, in some cases, urethrotomy or divulsion.

HYDROCELE.

In conclusion, I will add a word about the treatment of hydrocele by electro-puncture. This method has been strongly advocated, especially in France. The operative procedure has been either to pass the current without puncture of the sac, or to puncture the latter. Recent publications indicate that hydrocele is speedily dissipated by this means of treatment. I have employed it once in spermatocele, once in hydrocele.

Case I.—A middle-aged, healthy gentleman had a spermatocele (encysted) of the right testicle which had been repeatedly tapped, and had as often speedily refilled. He desired to try electro-puncture, fearing any more positive operation. In July, 1871, two needles, insulated except at points, were introduced at opposite sides of the thin distended cyst, and as strong a current as could be borne (varying from 8 to 16 cells, Stöhrer's battery) was passed for forty-five minutes. The needles were kept well apart, but were sometimes allowed to touch the cyst-wall. The puncture of the negative needle remained patulous, as a matter of course. Some of the fluid escaped alongside of the needle during the operation, and nearly all of it afterward. A small cutaneous slough came away from the point of negative puncture. The cyst went on to fill up again in about the usual time. It is fair to say, however, that after the operation certain indefinite painful and uneasy feelings, which had troubled the patient before the operation, ceased to be felt. They had not returned when the patient was last heard from, two months after the operation.

Case II.—A middle-aged, healthy man had simple hydrocele. The walls of the tunica vaginalis were thin and translucent. The tumor was tapped, and about three ounces of limpid fluid drawn off. The testicle was found healthy. The tunica vaginalis refilled slowly. The patient was now subjected to electro-puncture. The operative procedure was similar to that used in Case I. (spermatocele). As many cells were used as could be borne, and the current passed for forty minutes. The results were identical with those observed in Case I. The tunica vaginalis refilled in three weeks to its former size.

My experience does not allow me to speak with much weight upon this subject, as I can draw conclusions from only two cases, and one of these a spermatocele. It seems to me, however, that the cures which have followed electro-puncture in hydrocele are like the cures which follow simple puncture or tapping. I see no evidence, from my single case, that the current of the hydrogen or oxygen had any effect upon the secreting power of the serous membrane—a theory which has been advanced. The spermatocele was not a fair test-case, but the second case, I think, was. The puncture from the negative

needle remains soft and open for a longer time than would a puncture made by an exploring needle or fine trocar; furthermore, the thermal effect of the electricity upon the walls of the tumor would tend to irritate it, and thus to bring on adhesive inflammation. In this way electro-puncture would be a little more likely to cure simple hydrocele than would simple puncture. This seems to me to be about the merit of this method of treatment, although it is unjust to draw conclusions from a single trial.

ART. III.—*Note relative to the Bromide of Calcium.* By WILLIAM A. HAMMOND, M. D.

BROMIDE of calcium is a white crystalline substance, very soluble in water, and readily decomposing on exposure to the atmosphere for a few minutes. The aqueous solution is at first colorless, but it soon becomes tawny from a portion of the bromide being set free. Its taste is similar to that of the bromide of potassium, though somewhat more pungent and disagreeable.

The formula of bromide of calcium is Br. Ca., and its combining equivalent is 98 (Br. 78, Ca. 20 = 98); 100 grains, therefore, contain about 79.5 grains of bromine.

Desiring to test the therapeutical value of this compound, I desired Dr. Neergaard to procure it. During the last few months I have used it in a number of cases in which the bromides were indicated, and have become satisfied of its great efficiency as a medicinal agent.

The dose is from fifteen to thirty grains or more for an adult. It is especially useful in those cases in which speedy action is desirable, as, owing to its instability, the bromide is readily set free, and its peculiar action on the organism obtained more promptly than when either of the other bromides is administered. Chief among these effects is its hypnotic influence, and hence the bromide of calcium is particularly beneficial in cases of delirium tremens, or in the insomnia resulting from intense mental labor or excitement.

Thus, I gave a gentleman, who, owing to business anxieties, had not slept for several nights, and who was in a state of

great excitement, a single dose of thirty grains. He soon fell into a sound sleep, which lasted for seven hours. The next night, as he was wakeful, I gave him a like dose of bromide of potassium, but it was without effect, and he remained awake the whole night. The subsequent night he was as indisposed to sleep as he ever had been, but a dose of thirty grains of bromide of calcium gave him eight hours sound sleep, and he awoke refreshed and with all unpleasant cerebral symptoms—pain, vertigo, and confusion of ideas—entirely gone.

In a number of other instances a single dose has sufficed to induce sleep, a result which very rarely follows the administration of one dose of any of the other bromides.

In those exhausted conditions of the nervous system attended with great irritability, such as are frequently met with in hysterical women, and which are indicated by headache, vertigo, insomnia, and a mental condition of extreme excitement, bromide of calcium has proved in my hands of decided service. Combined with the syrup of the lacto-phosphate of lime, it scarcely leaves any thing to be desired. An eligible formula is—℞. Calcii bromidi ʒ i, syrup. lact. phos. cal. ʒ iv. M. ft. sol. Dose, a teaspoonful three times a day in a little water.

In epilepsy I have thus far seen no reason for preferring it to the bromide of potassium or sodium, except in those cases in which the paroxysms are very frequent, or in cases occurring in very young infants; of these latter, several, which had previously resisted the bromide of potassium, have yielded to the bromide of calcium. It does not appear to cause acne to any thing like the extent of the bromide of potassium or of sodium.

My object in writing this note is simply to call attention to a remedy which promises well.

ART. IV.—*A Contribution to the Natural History of Tubercles.*[1] By C. F. RODENSTEIN, M. D.

THE history and pathological specimens of the case I wish to report have already been laid before this Society at a previous meeting; and, if I repeat now what I said then, it is

[1] Read before the Yonkers Medical Society.

because I wish to make this case the basis of some remarks on the nature of tubercles, which I can now illustrate by microscopic preparations.

James P——, aged six years, came under my observation on the 13th of April, 1871. Of his parentage nothing could be ascertained. During the preceding winter he had been indisposed. He had a cough which was supposed to be whooping-cough, because a few paroxysms had been attended by the peculiar noise at inspiration which has given to pertussis its popular name. He became pale and emaciated. Naturally of a bright mind and lively disposition, it was noticed that he refused to go out to play, and preferred to loll about the room. He appeared at times dull and languid, at other times an unusual irritability of temper manifested itself. He frequently would seek his bed during the day; occasionally he complained of nausea. These symptoms were not of sufficient gravity to impress upon his guardians the necessity of seeking professional advice.

When the child was placed under my care, he suffered from headache, vomiting, and constipation. His respirations counted 24, and his pulse 76 beats per minute; his temperature measured 99⅕° Fahr. in the axilla.

Percussion and auscultation elicited no abnormal sounds from the thoracic viscera. The abdomen was retracted, and the pulsations of the aorta could be easily felt through its parietes. There was tenderness on pressure over the region of the spleen, and the field of dulness on percussion was abnormally large. The liver seemed unaltered. The urine contained no pathological products.

During the succeeding four days there appeared no material alterations in the condition of the patient. The bowels could be moved by cathartics, but the vomiting resisted treatment. The headache was severe and persistent. The appetite was not entirely lost: milk, his only diet, as well as drugs, would be tolerated by the stomach.

On the evening of the 17th the pulse became accelerated; the temperature rose to 100⅖° Fahr. On pressure the "tache cérébrale" appeared upon the abdomen. The child became restless and moaned.

The next morning I found him comatose. The pupils sluggishly reacted to light. There was a purulent discharge from the eyes and nose. The face was pale and apathetic; occasionally a rose-colored flush would pass over it. My clinical record shows for April 18th:

	Temperature.	Pulse.	Respiration.
Morning,	102	160	58
Noon,	103⅕	160	52
Evening,	102⅕	160	60

During April 19th coma deepened and continued. There were oscillation of the eyeballs and convergent strabismus, the eyelids were half closed, the pupils contracted. While standing by the bedside I noticed a convulsive movement, which I took for a spasm of the diaphragm. There were singultus and well-marked risus sardonicus.

	Temperature.	Pulse.	Respiration.
Morning,	103⅕	182	60
Noon,	102⅘	164	64
Evening,	103	170	68

These symptoms became more grave during the following day. Respiration was stertorous, irregular, and distressing; the pulse was weak, rapid, irregular, and intermittent. The patient died during the night, in profound coma. The last measurement of temperature showed 105°. There were no general convulsions in the whole course of the disease.

Fifteen hours after death a *post-mortem* examination was made. The body was found emaciated and pale. There were no maculæ emortuales. Rigor mortis was well marked. The clot in the longitudinal sinus was white and fibrinous in two-thirds of its extent. The cranial cavity contained two ounces of clear serum, and two and a half ounces of water were found in the cerebral ventricles.

On removing the dura mater, the evidences of inflammation became patent. There was considerable hyperæmia of the pia mater. Here and there patches of lymph were seen over the surface of the brain. A few isolated miliary tubercles were scattered over the crests of the hemispheres. By lifting the pia mater out of the sulci, a few more miliary granulations could be demonstrated. I have here such a small piece of the pia mater prepared for microscopic inspection. By holding

the slide to the light, you can see in the centre of the preparation a small, round, and opaque body, about as large as the head of a small pin, lying by the side of a blood-vessel which has become deeply stained by carmine, and is easily recognized by the unassisted eye. The appearance of the tubercle has been considerably altered by the preservative fluid and by manipulation. In its fresh state it had a light-gray, semi-transparent look. If you place this slide under the microscope, you will recognize this tubercle only as an object which prevents the transmission of light; but, by moving it out of the field of vision, you will see it replaced by numerous round cells, some being distinctly granular; and, by a little management, you can see that they seem to congregate in denser masses along the edge of the blood-vessel which lies in the middle of this preparation.

At the base of the brain, tubercles were found in much greater abundance. This specimen is a section of the encephalon, showing its surface at the base. I have cut about an inch on each side of the longitudinal fissure, and carried the section backward nearly parallel to it, through the frontal, middle, and posterior lobes of the cerebrum, after having removed the cerebellum, and that part of the hemisphere which lies above the corpus callosum. Within a quarter of an inch from the extreme edge of the frontal convolution you see rather small miliary tubercles dotting the course along the olfactory nerves, spreading into the fissure of Sylvius, crossing the optic tract, and stretching along toward the sides of the pons Varolii. Here they seem to have become conglomerated and formed into a denser mass, which increases in thickness as we trace it around the tubercula quadragemini and the posterior covering of the iter a tertio ad quartum ventriculum, until it forms a layer some two lines in thickness, and which has almost a cartilaginous feeling to the touch. A thin section of this mass shows it to be composed of compressed roundish cells, which I take to be identical with those we saw on the superior aspect of the hemispheres.

On opening the thorax, the pleura of each lung was found thickly studded with tubercular formations, some as small as any of those seen in the meninges, others varied in size up to

that of a lentil; some were grayish white, some had a yellowish tint, some were decidedly yellow. This is the right lung. The coloring of the tubercles has been changed by alcohol, but their form and size can still be appreciated by touch and sight.

Through the anterior surface of the upper lobe a hard lump can be felt in the substance of the lung. It is about as large as a hazel-nut. I have cut through it; it looks white, has a hard consistency, and is composed of roundish cells like the concretions at the base of the brain.

With the exception of a bronchial gland, there were no other abnormal conditions discovered in the thoracic cavity. This organ, you perceive, is very much enlarged. I have made a vertical section through it, and you see here a cavity large enough for my finger to enter with ease. Its walls are covered with a soft material, which is readily removed with the handle of a scalpel, and has the look and consistency of soft cheese.

The abdominal organs appeared healthy. There were no tubercular deposits on the peritonæum, nor on the mucous surface of the intestines; the mesenteric glands were healthy, as was also the liver; the latter viscus, contrary to my expectation, revealed no tubercular cells on microscopic examination. The spleen was somewhat enlarged on its upper surface. You see still a piece of the diaphragm attached; it is agglutinated to the capsule of the spleen by inflammatory material formed into false membrane; and, as I tear these layers of pseudo-membrane apart, one by one, you see they are thickly covered by miliary tubercles. There are none as large as the yellow tubercles of the pleura, but the most of them are larger than the isolated tubercles of the meninges.

This case, Mr. President, is of considerable interest to me: in the first place, because a correspondence between its clinical history and anatomical lesions can be demonstrated, which is not always possible; but, chiefly, because every form and variety of tubercularization can be illustrated by a specimen.

Incomplete as the history of this case undoubtedly is, especially as to its earlier stages, we have at least one salient feature which points to a specific pathological condition. The boy was supposed for a short time to have whooping-cough;

that is, he had paroxysms of coughing accompanied by that peculiar, noisy inspiration which resembles the whoop of pertussis. I have, on several occasions, made the diagnosis of tubercular deposits in bronchial glands, relying upon this symptom in connection with general depreciated health in children; and I think most of the more recent authors on children's diseases give an almost pathognomonic significance to this cough when not incidental to pertussis.

A bronchial gland with tubercles in a state of cheesy degeneration was found at the autopsy to account for this symptom; and the clinical history, on the other hand, enables us to form a judgment as to the primary tubercular deposit and authorizes the assertion that this bronchial gland was probably the first organ invaded by the disease.

It is not certain whether the deposit of tubercles in the lung and pleura was attended by rational and appreciable physical signs; but if the early development of tuberculosis takes place in a state of irritation, and furnishes symptoms that can be observed, then that stage, at least as far as the thoracic organs were concerned, must have been passed when the patient was placed under my care.

The tubercular deposit between the layers of pseudo-membrane which agglutinated the spleen to the diaphragm must of course have taken place during the progress of a perisplenitis, some symptoms of which, tumor and pain, were still perceptible when the patient was admitted to treatment.

Whether an irruption of miliary tubercles into the meninges of the brain had actually taken place at his admission may be doubtful. Headache, vomiting, and constipation, are observed in other cerebral lesions, and in simple meningitis as well as in the tubercular variety of this disease.

But below we may adduce some considerations which may incline us to think that tubercles became developed when the temperature of the body rose as indicated by the thermometer during the last days of his illness.

However this may be, to me the chief interest in the case is this: that we have here in one subject every variety of tubercular forms. In the meshes of the meninges, and chiefly along the blood-vessels of the pia mater, we see simple tuber-

cular cells and miliary granulations. The large gray and yellow tubercles we find scattered over the pseudo-membranes of the spleen. Among the formations on the pleura, the reticulated variety can be demonstrated. Concrete tubercular masses in bands and stripes were formed at the base of the brain. One large, round tubercle is embedded in the parenchyma of the lung; and a bronchial gland displays the so-called tubercular infiltration, or tubercles in cheesy degeneration.

The question here naturally arises, What is the relationship existing between these different forms of tubercularization? Do they represent the different stages of a process of growth? or are they separate manifestations of a morbid condition, so to speak, varieties of a pathological species? Are the miliary granulations the first stage of a process of which the infiltrated tubercles are the finale? or is the cheesy deposit the primary source of which the miliary irruption is the fatal effect? Or are they both the effects of two entirely different processes, the one a neoplastic result of cell-proliferation, the other the product of an inflammation? Such are the questions which have agitated the profession since the beginning of this century. Such are the questions which can only be answered by an inquiry into the nature and origin of tubercles.

I do not wish to enter into a general discussion of tuberculosis. I wish to confine myself to a single topic—which, however, will give to this whole subject a different aspect from that in which it is generally contemplated; and, to express at once, in one proposition, all that I have to say on this subject, I wish to prove the identity of the cellular element of tubercles with the white corpuscles of the blood.

You may recollect that, some two years ago, in a discussion which followed the reading of Dr. Bowles's paper before this Society, on the modern views of the pathology of phthisis pulmonalis, I expressed the opinion that the origin of tubercles would ere long be traced to an extravasation of white corpuscles of the blood. At that time I did not know that William Addison had already advanced that proposition in 1843. With the vast advances made in medical science by microscopic investigation, of which both the cellular elements of the blood and of tubercles have so frequently been the

subject, it seems strange that Addison should have had no followers, and that his views should have been so generally overlooked or neglected. Waldenburg has indeed lately suggested, among the hypotheses that might explain the results of his tubercular inoculations, that Cohnheim's theory of the emigration of white corpuscles might explain the presence of lymphoid cells in tubercular deposits; but he has failed to identify the one with the other; and yet to do so would seem to be the logical and inevitable result of his observations, as we shall see hereafter.

By microscopic appearances it is impossible to distinguish separate tubercular cells, such as we see scattered over the pia mater, from white blood-corpuscles. In every anatomical feature they are identical. It is true, both in text-books and in the lecture-rooms of eminent medical schools, the size and shape and nuclei of tubercle-cells are contrasted with those of the colorless cells of the blood. The same has been done in descriptions of pus-corpuscles; and yet who will now maintain that there is a structural difference between pus and white blood-corpuscles?

Virchow's fullest description of a tubercular cell is given in his great work on "Morbid Tumors," vol. ii., p. 637. "The true tubercular corpuscle is a real cell," he says; "neither a mere nucleus nor a solid body. Like leucæmic, typhous, and scrofulous cells, it resembles in all essentials the elements of lymphatic glands. It is a round cell of very variable size, generally smaller than the colorless corpuscles of the blood; sometimes, however, larger, double and triple their size. The cell-body is colorless, transparent, feebly granular, easily injured, so that it may be destroyed by pressure or section, by the addition of water or other fluids. In the interior of the fully-developed cell there is a single nucleus, small, tolerably homogeneous, frequently shining, which sometimes, however, is larger, distinctly granular, and furnished with nucleoli. Larger cells contain at times two or more nuclei, yes, sometimes twelve and even more. The multiple nuclei are often small and smoother, but not always in the same cell of equal size, sometimes quite large and granular." Now, this definition is as admirably descriptive of pus-cells as it is of tuber-

cular cells, and all these variations of form and color and contents were considered as sufficiently characteristic to distinguish them from the colorless blood-corpuscles, which were believed to be less variable at least in size. But Max Schultze, who has lately devoted himself to the study of the cellular elements of the blood, informs us that he constantly observes (and the observation can be verified by every one as soon as attention is directed to this subject) that there are colorless corpuscles in the blood which do not attain the size of the red corpuscles; that they are round cells, containing *one* or two nuclei; that there are others much larger, containing also only one or two nuclei; others which contain more, some of which are finely granular, others coarsely granular; that the nuclei of some are more homogeneous than others; and, again, that some have nucleoli and others not. We have, therefore, here again all the characteristics of the pus and tubercular cells. There is, however, one characteristic which is the most striking and wonderful quality of the white blood-corpuscle, and this is its power of locomotion: it is rather this physiological function, than any anatomical structure, which has enabled modern microscopists to recognize the identity of the white corpuscles of the blood with lymphoid cells in other tissues. Since the discoveries of Von Recklinghausen, they are spoken of as contractile migratory corpuscles or amœboid cells. Now, tubercles are generally only seen after death, and of course amœboid motion is as utterly out of the question as muscular motion. But there is at least one organ in which tubercles can be seen during life, namely, the eye. Whether there were such tubercular deposits in the case I observed, could not be ascertained. Ophthalmoscopic observations were impracticable, and *post-mortem* examination had to be avoided on account of the necessary mutilation. But there are now quite a number of cases on record in which tubercles were observed in the choroid. Manz supposed them to be proliferations from the cells of the adventitia of the blood-vessels. Bush, however, found nothing which would confirm this opinion, and assumed, as they must be the results of cell-proliferation, that they came from the large unpigmented stroma-cells of the choroid. But Colnheim, who reported seven cases which had been under his

observation, says tubercles of the choroid proceed neither from the nuclei of the capillaries nor from the large unpigmented stroma-cells, but from a third kind of cells, which are found beside the pigmented and unpigmented stroma-cells; they are small, pale, finely-granular cells, of the character of lymph and pus corpuscle—in short, the contractile migratory cells of Von Recklinghausen.

There is nothing, therefore, in the morphology of tubercular cells, as far as it can be ascertained by the most expert microscopists, which militates against their identity with the white corpuscles of the blood.

The locality of tubercles also favors the presumption that their cellular elements are derived from the blood. They are generally developed along the course of the vessels. This fact has been noticed by many observers. Some, indeed, have assumed that they were developed from the sheath of the arteries or the cells of the capillaries. Others, it is true, have thought that they were proliferations from the epithelium of the lymphatics. And certainly formations similar or identical with tubercles, especially the so-called reticulated tubercle, are seen along the tract of the lymphatic structure. Wagner has lately described these formations in an admirable monograph, and denominated them *lymphadenoms*. Those cellular elements are certainly the same as those of the tubercular corpuscle. And whether there is a real difference between a tubercle and a lymphadenom or not, lymph-corpuscles and tubercle-cells being identical, the occurrence of lymphoid neoplasms within the immediate neighborhood of lymphatic organs would in no way interfere with the assumption that the miliary granulations along the blood-vessels derived their cellular constituent from the blood.

But that illustrious teacher, whose genius has created the cellular pathology, rejects, with all the force of his matchless eloquence, the theory that tubercles are derived from the blood, and insists with the utmost positiveness that they are proliferations from connective tissue. The name of Virchow stands so high that, to question his opinions in pathological anatomy, almost implies ignorance or presumption. And yet in his cellular pathology he taught, with the same wealth of

illustration, with the same eloquent positiveness, that pus-corpuscles are derived from connective-tissue cells; and yet, notwithstanding this, he gave his adhesion to Cohnheim's theory as early as 1867, in a paper read before the meeting of the German Naturalists, at Frankfort-on-the-Main, if I understood him rightly. Perhaps he will also change his views on the origin of tubercles.

At all events, for my purposes, I could not find a better specimen to illustrate the formation of tubercles from the migratory cells of the blood than that of which Virchow gives a picture to prove the opposite theory. (*Vide* "Krankhafte Geschwülste," vol. ii., p. 633.)

This represents a tubercular formation within the sheath of an artery taken from a case of tubercular meningitis. At its lower end you see the sheath pretty closely adherent, and showing somewhat enlarged fusiform cells; as we ascend the artery we find the sheath more and more distended by an increasing accumulation of small round cells. Virchow assumes them to be proliferations of the connective-tissue cells. But a mere look at this picture suggests to me a much more natural explanation for the presence of these round cells between the coats of the vessel. At a closer inspection you see that the middle coat also is studded with the same round cells, which seem to dissect off the outer membrane, and that these same round cellular structures adhere to the free surface of the inner coat. Now, it seems to me it is much more natural to suppose—knowing that amœboid cells are disposed to migrate—that these cells are in the act of leaving the blood-vessels, than that they originated outside of the muscular coat and penetrated the artery from the adventitia. And, if you will only look at the outlines of the sheath, you cannot fail to notice at least three places where the round cells seem to be in the very act of breaking through the outer coat to escape into the surrounding tissues.

I have here a preparation for the microscope, by which I thought I might illustrate this process; unfortunately, it has been spoiled by asphalt in mounting. But no preparation can show the escape of cells from blood-vessels more beautifully than that which is represented in this woodcut. Had I

made the drawing, it might be suspected that preconceived theory guided the pencil; but this is Virchow's book. He prints this picture to prove the proliferation of tubercular cells from connective-tissue cells. But is not mine the most obvious and natural explanation of what we see there?

Another consideration, which I think will confirm the conclusion at which I have arrived, is, the existence of tubercles in and between the layers of pseudo-membranes. I am well aware that this very fact has been claimed as a proof that tubercular cells are directly derived from connective-tissue cells. But I could never see the force of such argument. For while it is true that false membranes are poor in blood-vessels, and that their existence cannot always be demonstrated, it by no means follows that, therefore, tubercles found in false membranes must be derived from some other source than the blood-vessels. For instance, the layers of pseudo-membrane which agglutinated the spleen to the diaphragm, in the case under consideration, are thickly studded with tubercular formations, yet it is impossible to show them to be vascular; they are quite fresh, easily separated, the products of a recent inflammation. But, while they may not possess blood-vessels, they are themselves the products of exudation. The organized material and the organizing element came both from adjacent blood-vessels. And, assuming that tubercular cells are identical with the white blood-cells, is it such a stretch of the imagination to believe that they came along with the inflammatory exudation and formed into tubercles, while the other elements of the blood were organized into membranes?

I must guard myself here against a misunderstanding. I do not wish to return to the theory of Broussais and Andral and other French pathologists, and maintain that tubercles are an inflammatory exudation. For, while I think it most consistent with clinical observation and anatomic pathological facts to assume that tubercular cells are deposited during an inflammatory process—an opinion which has also the support of physiological experiment, for the amœboid movement of the white blood-corpuscles becomes exceedingly lively as soon as the temperature is raised to 39 or 40° Centigrade—it does not follow that, therefore, they are the products of inflamma

tion; that is, that they are developed out of the blastema, which was supposed to become organized either into false membrane or pus. Tubercular cells may transude from the blood with inflammatory material, as Rokitansky supposed, without being themselves inflammatory in character.

I know it is very difficult at this moment to formulate a satisfactory theory of inflammation. For, while it is impossible to rest satisfied with the old definition of "rubor, calor, cum tumore et dolore," the newest ideas evolved by Cohnheim's discovery are not sufficiently developed to form the basis of an exhaustive definition of that pathological process, which all recognize as a clinical fact, and call inflammation. At present we are still compelled to be contented with saying that the effusion of serum, lymph, and pus, and the formation of false membrane, under an increased temperature, are inflammation. Now, during this process, tubercular cells may be also exuded from the blood-vessels, and yet be not inflammatory product. This may at first seem to be a mere logical quibble. For, as pus-corpuscles are only emigrated white blood-corpuscles, and tubercular cells are emigrated white blood-corpuscles, and the first, according to the received definition, are inflammatory products, it may be said that tubercles are also inflammatory in fact, although in mere definitions they are not enumerated among the exudations.

But white pus, white blood-corpuscles, etc., are essentially the same structures, and cannot be distinguished either by anatomical or physiological characters; in fact, are one and the same thing. There is a pathological cause, which in the one instance makes of a white blood-corpuscle a pus-cell, and in another a tubercular cell, in the same way as a pathological process may make one man a dyspeptic and another an epileptic, and both be men still. Or, as, in embryological development, there is a physiological tendency which causes one cell to become an astroblast, and another of identical structure to become a connective-tissue corpuscle, so is there a pathological tendency which causes one amœboid cell to become a pus-corpuscle, and another a tubercular cell. And, although pus and tubercular cells are identical in healthy blood, and are transuded in inflammation, it is as improper to say that tuber-

cles are only a collection of pus as it is to say that a leucæmic, or typhous tumor, or a glioma, is a collection of pus, notwithstanding that each is made up of round migratory cells. For the characteristic of a tubercle is not that it is made up of round cells and nuclei, but in that it is tubercle, a distinct neoplastic formation. For, as a glioma is a neoplasm, though its cellular element is largely made up of lymphoid cells, and these cells may have emigrated from the blood-vessels during a retinitis, which may have been the first starting-point or occasion of a gliomatous growth, so is a tubercle a neoplasm, although its cellular elements may have escaped from the blood-vessels during a pneumonia or a meningitis.

The organization of tubercles is of the simplest form. They are not vascular; but vascularity is no longer deemed the essential feature of an organism. If blood-vessels are seen in tubercles, they are not of a new growth. They are the old vessels from which the tubercular cells exuded, and which become obliterated generally by pressure. Now, if we accept the results of Wagner's investigations, and exclude from tubercles, lymphadenoms—the so-called reticulated and encysted tubercles—we have but one type of organization left as characteristic of tubercles, namely, round cells embedded in a hyaline matrix. Whether the tubercular cells, after they have left the blood-vessels, proliferate and, so to speak, grow into miliary tubercles, and the miliary granulations develop into larger tubercles by endogenous growth, or whether the size and form of tubercular deposits depend upon the accumulation of lymphoid cells, and are conditioned rather by external circumstances, such, for instance, as the nature of the tissues into which they are poured, cannot yet be determined.

In making experiments with blood-corpuscles, I have lately noticed that, if a drop of blood, freshly drawn, be placed in an alkaline solution of carmine, the red corpuscles lose their power of forming rouleaux; and the white corpuscles absorb the carmine, seek each other, congregate in little masses, and seem to become agglutinated to each other. I have here a drop of blood prepared for microscopic inspection. By careful focussing, you can still see the whole field covered by fine little rings which seem to form a delicate net-work, looking

somewhat like the cornea of a fly seen with a low power; this is nothing but the red corpuscles of the blood which touch each other by their edges. Scattered over this delicate, pale net-work, you can see, here and there, little, bright-red, cellular masses; these are the white corpuscles of the blood tinged with carmine. In specimens of pathological urine, I have also seen sometimes, under the microscope, that pus-corpuscles have a tendency to approach each other, and to form adherent masses.

Perhaps the formation of miliary tubercles takes place in a similar manner. The amœboid cells, when leaving the circulation, may bring with them a tendency to form into granulations; or the chemical or physical condition of the surrounding tissues may determine them to assume the form of minute nodules. We find sometimes, with these semi-transparent bodies, others rather of a fibrinous structure; they may represent a subsequent stage in the development of tuberculari-zation. The lymphoid cells may have changed into fibrinous tissue by progressive metamorphosis. Virchow thinks that the fibrinous tubercle represents the first stage of tubercular growth, which has not yet unfolded itself into the full-blown cellular tubercle. Langhaus, on the contrary, looks upon this formation as the full development of the cellular tubercle, and describes it as consisting of three zones, formed by the transformation of round cells into fibrillæ. Whether such bodies can be distinguished from minute fibromas, or whether the one or the other be the earlier stage of a continuous development, the tendency of all tubercular deposits to speedy decay has been universally recognized. Virchow says: "This structure, which in its development is most nearly related to pus, inasmuch as it has the smallest nuclei, and relatively the smallest cells, is distinguished from other more highly-organized forms of cancer, cancroid, and sarcoma, by the circumstance that these contain large voluminous corpuscles, with highly-developed nuclei and nucleoli. Tubercles, on the contrary, are always a pitiful production, and from the very outset perishable." And in this respect, also, tubercle betrays its origin and nature. The common characteristic of all formations in which the lymphoid cell-element predominates is to cheesy

degeneration. Inspissated pus, a scrofulous gland, a lucæmic tumor, typhoid deposits, the exudation of a catarrhal pneumonia, all have a tendency to terminate in tyrosis. And, like them, the ordinary termination of tubercular deposits is in cheesy disintegration.

If any further proof were needed to establish the identity of tubercular cells with white blood-corpuscles, it would be furnished by the experiments lately made to ascertain the inoculability of tubercles. Many varieties of domestic animals have been used for that purpose. Tubercular and other pathological matter has been inoculated, and in a large percentage of cases resulted in tuberculosis. Villemin first succeeded in 1865 in producing miliary tubercles artificially; since that time many other experimenters have been equally successful. Langhaus and Bejin alone deny that the nodules seen in the inoculated animals were true tubercles, but only because they differ from other observers in the definition of tubercles. The latter, for instance, in describing the *post-mortem* appearances of one of the animals inoculated by him with tubercle, says: "The mesenteries were thickly strewn with small, gray, semi-transparent nodules, which, under the microscope, showed granules and small cells of the sizes of the colorless corpuscles of the blood, with large nuclei, sharp outlines, and destitute of fat." Now, this is exactly what others call miliary tubercles.

Most of these experiments were made to ascertain the specific infectious nature of tubercles. While some follow Villemin, and maintain it, others have inoculated with non-tubercular matter and still produced tubercles; and they, of course, maintain the non-specific nature of tubercles. With this question we have nothing to do at present. But among the indifferent substances used was aniline blue. Waldenburg, indeed, reports a case where nothing but aniline was injected, and produced tubercles. Other experimenters have mixed aniline blue with the matter which they inoculated, and, in those cases in which tuberculosis followed, it was found, after death, that the tubercles contained aniline blue.

Now, we know that the white corpuscles of the blood possess the power to swallow and incorporate into themselves finely-granular coloring matter. Cohnheim's experiments were

based upon this fact. He injected aniline blue. He knew the white corpuscles would absorb it; and when, afterward, he found pus-cells containing blue granules in the cornea and the mesenteries, where he had produced an artificial inflammation, he inferred the identity of pus corpuscles and the colorless elements of the blood.

And if this conclusion is valid, then also must it be granted that the presence of aniline in tubercles, artificially produced by inoculations holding aniline, proves the tubercular cells to be identical with the white corpuscles of the blood.

At the conclusion of a paper devoted to the discussion of a single topic, it is impossible to point out the full bearing of these views upon the current opinions on the general subject of tuberculosis. And yet I may be permitted, perhaps, merely to intimate that their adoption might lead to a reconciliation of the conflicting theories of the schools. If the cellular elements of tubercles would be recognized as emigrated white blood-corpuscles, the question whether tubercles be of an inflammatory origin, or of heteroplastic growth, would lose its significance. For, while, on the one hand, the blood-vessels would be acknowledged as the source of the constituent elements of tubercles—and that is all that the advocates of the inflammatory hypothesis can maintain, for a tubercle as such, in its entirety, cannot be an exudation—on the other hand, the organization of these cellular elements into tubercles would still partake of the nature of an heterologous neoplastic process; for these formations would be built up of other cells than those which naturally belong to the tissues in which they are found.

Nor could there be any longer any dispute as to what constituted the characteristic form of tubercles, the miliary granulation of the infiltration. Both being essentially composed of round lymphoid cells; both coming originally from the blood; both having the tendency to cheesy degeneration; both being the products of that general pathological tendency which causes the white corpuscles to emigrate, and to assume different forms in different locations—there would be no difficulty in granting both to be truly tubercular, although the one may never have been miliary, nor the other infiltrated.

Even the older controversy between the solidists and humoralists might be settled by a compromise; for, while tubercles are certainly derived from solid elements, the tendency, the real pathological moving power, which causes a white blood-corpuscle to become a tubercular cell, may reside in the fluids, and be the result of physical conditions or chemical changes, for which our reagents are not subtle enough, and our science is too clumsy to demonstrate.

The recognition of the identity of tubercular cells with the white corpuscle of the blood would save us from the reabsorption theory, which at this moment threatens to become the favorite hypothesis of the day. Modern surgical pathology has just delivered us from the terrors of the unknown, by differentiating pyæmia from septicæmia, and explaining the nature of both. And scarcely have we recovered from the nightmare of an undefined purulent absorption, when we are asked to embrace again the former loose and indistinct notions of pyæmiæ, and call them tuberculosis. As soon as we believe that the tubercular cells are blood-cells, we need not to assume the existence of "foreign centres of corpuscular infection," and claim the blood as a transporting medium. It is not so easy to prove the origin of tubercles by infections as some are inclined to think, by seeing the results of artificial inoculation in animals. I have no doubt that, while reading this paper, some gentlemen have thought the case which forms its basis an admirable illustration of this theory; for clinically and anatomically it can be demonstrated that the bronchial gland, found *post mortem* in a state of cheesy degeneration, was the first organ attacked; and the inference is tempting that the other organs became affected by tubercular deposits, through infection from this gland. But this bronchial gland itself was the seat of tubercular deposits—and whence was it infected? I have no doubt an ardent resorptionist might have found a primal source of infection. Nowhere is the scriptural promise, "Seek and ye shall find," so universally fulfilled as in medicine. And in this case it might have been discovered that the boy had had a catarrh or a boil somewhere, as who has not? But how wide and how wild is the inference that any catarrhal or purulent secretion may become the source of tuberculosis!

Again, the views which I have advanced may enable us to estimate the degree of malignancy to be attributed to tubercles. The large conglomerate tubercle of the brain or other organ may prove fatal by mechanical pressure; but most persons suffering from tuberculosis die of phthisis or meningitis. It is the inflammatory process, of which miliary granulations or cheesy transformations are the accompaniments, which destroys the patient. I question if there is any inherent malignancy in tubercles as such. And instead of saying, with Niemeyer, that the worst thing that can happen to a phthisical patient is his becoming tubercular, I would say a man might stand his tubercles, if they were not the accompaniments or causes, or both, of a pneumonia, a meningitis, an enteritis, or a nephritis.

In closing this paper, I cannot repress the reflection that the adoption of these views would exert by far the most important effect upon us, as practising physicians, by throwing a ray of hope over the field of therapeutics. Virchow has pointed out that cheesy degeneration is the common but not necessary termination of tubercles. Some undergo fatty degeneration, and are absorbed. We have learned that cheesy pneumonia may terminate in recovery; and if there is no malignant omen inherent in tubercles, then cheesy pneumonia, even if undoubtedly of tubercular origin, may not necessarily be fatal. Such considerations will stimulate to new endeavors to devise means for the prevention of tuberculosis, or to limit its devastations. I do not believe that the consumptive will find a cundurango-tree any more than the cancerous patient. But I know that science is progressive, and that the limits of our art have not been reached. Nature may have no specifics; but the tree of the medical knowledge of good and evil will still blossom, and bear golden and abundant fruit for the healing of the nations.

Clinical Records from Private and Hospital Practice.

I.—*Malignant Colitis, or Gangrenous Inflammation of the Rectum and Colon.* By H. S. Chubbuck, M. D., Elmira, N. Y.

N. W. G., merchant, aged sixty-two years; good constitution, always healthy. On Friday, September 15, 1871, he came from his store to my office for medical advice. Being absent at the time, he left word for me to call at his house. I found him lying on a sofa. Said he had been troubled with diarrhœa for about ten days, night and day, passages from five to twenty times a day. Pulse perhaps 90. Tongue coated somewhat, but not as much so as it became afterward. Had a dull, heavy pain or load across the region of the stomach, or transverse colon. Weak and prostrated. Had taken a dose of pills four or five days before. Had been at the store every day till now.

Gave two blue-pills, followed by castor-oil, and powders of opium and camphor.

16*th.*—Messenger came, at noon, saying patient could not urinate. Was troubled greatly on this account. Found him with not much fever, tongue a little dry, pulse about the same. Still complained of the load in the region of the stomach. Had not passed water since 11 o'clock P. M. of Friday. In considerable distress on account of distended bladder. Frequent desire to urinate. Bowels had moved three times, from the oil; feculent matter, followed by the reddish fluid discharges of previous days.

Discharges peculiarly offensive, like decomposing animal matter. Have been of this horribly fetid character from the beginning. Disinclined to have a catheter used. Gave as a reason that he had witnessed its use in the case of a friend, where it produced very great pain. Ordered fomentations to the bowels, and gave opiates. In the evening, pain more severe. Had only made an ounce or two of water, by repeated efforts. Still opposed to the introduction of a catheter, notwithstanding my assurance that, with Dr. Squire's new catheter, the operation would be free from pain. Thought he should be able to make water during the night.

17*th*.—In the night had only passed a few drops of urine, but was in a great deal of pain, and had constant and intense desire to urinate. Could not live so. Was ready for any thing. Used the *vertebrated catheter* with no trouble, and drew off *full two quarts* of water. This relieved him of his greatest distress, but the load and pain in the region of the transverse colon remained. Pulse the same. Tongue a little dry. Bowels moving frequently. Stools fluid and of a reddish color, like beef-brine, and the odor was fetid and offensive in the highest degree.

18*th*.—Symptoms culminating. Pulse 148, counted with the ear over the heart. Bowels the same. Catheter used again, drawing nearly two quarts of water. No inclination to urinate, and no special inconvenience from the full bladder.

19*th*.—Vomited last night. Pulse 84. Bowels moving as heretofore. Discharges unchanged in character. Catheter used twice a day.

20*th*.—Abdomen somewhat distended. Sense of weight or obstruction in the region of the stomach. Patient and his family exceedingly apprehensive. Counsel obtained. Medicine by the alimentary canal being out of the question, external applications were used, and morphine was given subcutaneously.

The symptoms now grew more serious every day. Regurgitation from the stomach. Stools involuntary and of a dark-brown color. Catheter used regularly twice a day. He lived six hours with no pulse at the wrist, and died at 9 o'clock A. M., Monday, 25th of September, ten days from the first professional visit, and about twenty days from the commencement of the attack.

Post-mortem Examination, Six Hours after Death.—Body not emaciated. Abdomen moderately distended. Marks of external applications over the bowels, and, at the epigastric region, some dark, dry spots, indicating an approach to gangrene of the integument.

The viscera of the abdomen being exposed, there was found to be little or no serum in the cavity, and only slight traces of recently-effused lymph, causing the folds of intestine to adhere to each other feebly, in certain places. Considerable fat pre-

sented itself in connection with the omentum and the intestines. The walls of the abdomen also presented a thick layer of adipose tissue. Conspicuous, in the cavity, before any of the parts were disturbed, was the transverse colon, distended to a diameter of more than four inches. At first view it was supposed to be the stomach, but this latter organ was, afterward, found pressed backward beneath the diaphragm, and in a healthy condition. The distended transverse colon exhibited, on its free and exposed surface, three or four dark spots, an inch or more in diameter—indications of approaching gangrene, or progressive ulceration of the mucous surface. Slight pressure with the finger on these spots strengthened the suspicion of destruction of the coats within. Equal distention existed in the ascending colon, and at the caput coli; and the descending colon bore similar evidences of internal disease. In the small space bounded by the distended colon, the folds of the small intestines were seen not particularly increased in size.

It immediately became evident that the utmost precaution would be required to prevent accidental rupturing of the attenuated walls of the large intestine. With great care the small intestines were first removed. They were in a healthy state. In attempting to raise the cæcum from its bed, the wall of the intestine gave way, and the offensive contents of the canal exuded. A similar accident occurred on the opposite side of the abdomen, in attempting to raise the descending colon. The sigmoid flexure was found to be in a still more precarious condition, and, when the rectum was reached, there was no strength nor firmness whatever in the walls of the canal, and, with the slightest possible effort on the part of the fingers, the disintegrated intestine was lifted from the cavity of the pelvis. The large intestines—rectum, colon, and cæcum—in this softened and putrid condition, were conveyed to a large wash-bowl for cleansing and further inspection.

The interior of the larger intestine was gangrenous throughout. There was scarcely any mucous membrane to be seen, healthy or otherwise. The muscular coat also had, in a great measure, disappeared under the destructive ravages of the disease. The internal surface of the canal seemed to be occupied

by one continuous ulcer, the floor of which was in some places the peritoneal coat; in others, the disintegrated muscular tunic; and, in some small places, it is true, patches of mucous membrane could be seen. The prevailing color of the interior of the diseased canal was dark brown, approaching to black.

In the latter part of the examination the putrid odor was so disagreeable, and the handling of the decomposed intestine so unpleasant, that most of the physicians present seemed only anxious to have the autopsy over with, the body closed, and themselves in the open air. No part of the intestine was saved for subsequent study.

Remarks.—As throwing some light upon the *cause* of this deadly disease, it may be stated that the business-office of the patient was in the back part of his store, overhanging the river bank, where excrementitious matters, accumulating during low water, have given rise to emanations extremely disagreeable. Another item of evidence, pointing in the same direction, is the fact that the partner or chief clerk of this patient, and who also spent much of his time in the same unhealthy office, was taken sick about one month before, and died on the 15th of September, the very day upon which this patient was compelled to take to his bed. The disease of the partner or clerk was reported to be *typhoid pneumonia*.

So far as known, no other cases of miasmatic disease have occurred in the same neighborhood.

While the reporter has no desire to enter upon speculations as to the pathology and nature of this disease, he nevertheless regards the case as a very rare and peculiar one, and therefore worthy of publication.

The catheter lately invented by Dr. Squire, and named by him the *vertebrated prostatic catheter*, was used with perfect ease, and with no pain to the patient. The evidence derived from this case, and others in which it has been used with equal satisfaction, proves it to be an instrument of decided value.

II.—*A Fully-matured Tænia Solium, or Tape-worm, expelled from a Child Five Days old. Report of a Case occurring in the Long Island College Hospital, Brooklyn, N. Y.* By Samuel G. Armor, M. D.

The natural history of tape-worm parasites has been a subject of fruitful speculation, and, so far as I am aware, the case here reported is quite unique. The tænia solium, according to Küchmeister's investigations, "only occurs in children who partake of hog's meat." Neither he nor Cobbold makes mention of the possibility of a fully-matured tænia occurring in infantile periods of life. And Vogel says, in writing of tape-worm: "They are rarely found in children under one year of age, in nurslings probably never." This latter statement is in harmony with the generally-accepted view that "animal food, either raw or partly cooked, is the probable source of the tænia solium."

The theory appears to have been generally accepted heretofore, that the encysted parasites are taken with the food into the stomach, and that the embryo, set free from the covering of the egg by a process of digestion, passes into the intestine, fixes itself to the mucous membrane, and, by a process of budding, produces the long, tape-like series of the articulations, which are finally converted into the full-grown tænia. Whether this be the universally-accepted theory, or not, certain it is that the encysted parasite, found in whatever part of the body it may be, only develops to maturity in the *intestinal canal.* The query at once arises, therefore, How did the *cisticercus*, in the case here reported, gain entrance into the intestinal canal of the new-born infant? for it is difficult to arrive at any other conclusion, from the clinical history of the case, than that the worm was fully matured at the birth of the child.

Without offering any speculations as to how the young tænia gained its embryonic *habitat*, I merely copy the clinical record of a case which recently occurred in the Long Island Hospital, Brooklyn, N. Y.:

Kate Quinn, aged twenty-four, an Irish servant-girl, of apparent good general health, was admitted to the hospital September 3, 1871. Diagnosis—*parturition* and a *primipara.*

In less than an hour previous to her admission she gave birth to a well-developed male child in the street, and, having no home, she was at once brought to the hospital.

September 4th.—Mother doing well; child nurses vigorously, and is apparently well.

September 7th.—Child for the last fourteen hours has refused to nurse, and examination reveals *trismus*, preventing introduction of little finger into its mouth, and touching extremities induces slight tetanic spasms. Ordered mild anodyne, but with no relief.

September 8th.—Babe seen by Prof. Skene, who, supposing the child was suffering from intestinal irritation from some cause, ordered three $\frac{1}{6}$-gr. doses of calomel, to be followed by oil, and at 7 P. M.—some ten hours after taking the first dose of calomel—the infant passed, *per anum*, two segments of what was at once recognized from its obvious appearance as a *tape-worm*, flat, perceptibly cornuted, and possessed of slight wabbling motion of a minute's duration. The specimen, carefully picked out of the fecal matter in the babe's diaper, was submitted to different members of the hospital-staff, placed under the microscope, and the diagnosis concurred in that it was well-matured tænia solium.

September 9th.—Trismus continues; small amount of mother's milk fed by spoon; at 5 P. M. three more segments of worm came away; ordered spts. terebinth, 15 drops in mucilage.

September 10th.—One more segment voided; trismus remains; spasmodic action from touching extremities less; takes milk from spoon eargerly, but has no power to grasp nipple; repeated spts. terebinth.

September 11th.—Another segment came away; still makes fruitless attempts to grasp nipple; ordered oil of male fern, 15 drops in mucilage.

September 12th.—Repeated the oil of fern, to be followed by small dose castor-oil.

September 13th.—One more segment passed; suspended medicine for a few days.

September 18th.—Two $\frac{1}{2}$-gr. doses of calomel ordered at intervals of two hours; soon after the administration of last dose four more segments passed; trismus entirely gone; child

nurses well, the mother having an abundant supply of milk; medicine discontinued.

October 18th.—Mother and child still in the hospital; both doing well; the child has passed several segments since last record, but none having the appearance of the head. Child has never taken any nourishment but the mother's milk.

The foregoing is the brief clinical record of the case; as to the facts stated there can be no doubt. The case was carefully and critically watched by Prof. Skene, of the hospital staff, who was on duty, and by T. H. Hutton, M. D., resident physician.

On October 2d, twelve of the segments passed were presented to the Long Island College Hospital Society for examination, and, at their suggestion, B. A. Segur, M. D., a gentleman of skill and experience in the use of the microscope, was appointed to make further examination of the specimens. At a subsequent meeting of the Society, Dr. Segur reported that "the specimens presented to him for examination had the obvious appearance of tænia, and under the microscope, with $\frac{1}{2}$-inch objective, he was able to see the eggs, presenting the same size of joints passed by adults."

The specimens were subsequently presented to the Pathological Section of the Kings County Medical Society.

Can the mother communicate the germs of the parasite to the fœtus in utero? And, if so, how do they gain entrance to the intestinal canal?

To determine one of the questions, the mother, being still in the hospital, and having fully recovered from her confinement, was, on the 8th of November—about two months after the birth of her child—put upon treatment for tape-worm; although neither previous history nor present condition indicated the presence of tænia. She is an unusually stout Irish girl, of good flesh, good digestion, cheerful disposition, entire freedom from nervous disturbance, always rested well of nights, and never herself suspected the presence of tape-worm. However, for the purpose above indicated, the mother's bowels were thoroughly evacuated, and, while fasting, she was ordered an emulsion of pumpkin-seeds, which she faithfully took for

twenty-four hours, at the end of which time she passed over seventy segments of tænia.

This completes the clinical history of a case which throws much doubt upon the present-received theories as to the probable and *exclusive* source of tænia. That the encysted parasites gain entrance to the stomach and bowels by means of animal food containing the parasitic germs, the experiments of Küchmeister and others leave no room to doubt. But that they may also gain entrance through the mother to the fœtus *in utero* would appear to be equally well established by the case here reported.

Proceedings of Societies.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, November 16, 1871.

Dr. E. R. Peaslee, President, in the chair.

NATURAL HISTORY OF YELLOW FEVER.

Dr. J. C. Nott read portions of an extended paper upon this subject, premising that his remarks would be confined to a few points in the natural history of yellow fever, and that they would be drawn chiefly from a wide personal observation of the disease.

Yellow-fever epidemics were frequent in New York, Philadelphia, and other Northern cities, during the last century and the first quarter of the present; and our exemption from them for the past fifty years should not betray us into expecting a permanent immunity. In 1856 there were some five hundred cases of this fever in New-York Bay, reaching as near us as the suburbs of Brooklyn; and only last year there occurred on Governor's Island, within a period of three months, one hundred and fifty-nine cases, of which fifty-two proved fatal. It might as well have struck this city, and swept off thirty or forty thousand of its inhabitants in the same space of time. Even some of its worst-ravaged regions

under the tropics have enjoyed long intervals of repose; and when, as for a few years past, it has been showing unusual activity, and sending its forerunners North, it behooves us to keep a strict watch upon its movements. To do this intelligently, as well as to prepare ourselves to meet its possible invasion, we must acquaint ourselves, as far as possible, with the causes, or at least the circumstances, of its origin and development, its habits and modes of progression.

Yellow fever belongs to the great family of zymotic diseases, whose members may be arranged, with reference to their modes of propagation, into: "1. Diseases like syphilis, which are communicable by contact or inoculation alone. 2. Those like small-pox, which are intensely contagious, and communicable by inoculation, by fomites, and through the air. 3. Those like scarlet fever, which are inoculable with difficulty or not at all, and contagious in a less degree than small-pox, but communicable through the air, and portable by fomites. Their poison, like that of syphilis and small-pox, is generated in the human system, and eliminated in the same form in which it entered. 4. Yellow fever, which is not generated in the human system, nor transmitted from one person to another in any way, but whose germ or poison is generated outside the human system, and is taken in after the manner of marsh malarial poison. But, unlike this, its germ is *portable*, and may be carried in vessels, trunks, etc., from one point to another, and thus propagated. (In the exceptional cases where the disease seems to be communicated by personal contagion, its poison is, doubtless, in reality transmitted by the clothing.) 5. Marsh-malarial fevers, which are strictly endemic, of local origin, not contagious, and not portable."

The speaker here discussed the nature, mode of origin and of propagation, of contagia in general, accepting the germ-theory as expounded by Beale, and quoting Lancaster and Aitken to the effect that decomposing organic matter, even where it may not originate the disease-germ, may yet furnish the suitable pabulum for its development and multiplication. So also may the tissues of the living body supply pabulum to certain germs, which, from their reproduction within and elimination from it, give their diseases the prop-

erty of personal contagiousness; while marsh miasmata, and the like, being incapable of such reproduction within the body, are not thus communicable.

Yellow fever, as we have seen, agrees in this last respect with the marsh fevers, but differs from them in that its germ will sometimes adhere to fomites and bear transportation to long distances without losing its power of reproduction when it meets with favoring conditions. Occasionally, indeed, it traverses great extents of country, seeming to have a definite course of march, and to break through every obstacle put in its way. "But places out of its line of travel are often protected by non-intercourse, and hence the importance of quarantines." In these migrations, when the disease, from unknown causes, shows unwonted violence, it pays little attention to topography. The epidemic of 1853 swept over six States of the Union (Florida, Alabama, Louisiana, Mississippi, Arkansas, and Texas), embracing every variety of soil; and this was but a part of the more extensive epidemic which began in Rio de Janeiro in 1850 and appeared in Philadelphia in 1855. In Spain, within the present century, the mountainous regions, and even the bare rock of Gibraltar, have been among the places suffering most severely. The epidemic wave which struck Philadelphia in 1793 had already ravaged the Gulf States, and did not expend its force until it reached Quebec in 1805. That which, coming as usual from the tropics, reached the Gulf in 1817, followed the coast, and culminated in New York in the terrible pestilence of 1822. Then followed a long period of repose, until the epidemic of 1850–'56, which was almost unparalleled in violence.

The mode of progression of the disease in these epidemics has an important bearing on its etiology. In our Atlantic cities it begins near the wharves, and travels in the most gradual manner from house to house, apparently uninfluenced by the direction of the wind. In this city, in 1822, it was estimated to advance at the slow rate of forty feet a day, enabling the Health Board to fence off the infected district, extending its boundaries from time to time. Outside the fence, one might feel secure from infection. In Mobile, in 1842, the fever began on the southern side of the town, and took six

weeks to overrun that half of it lying south of Dauphin Street, when its progress was arrested by frost. The speaker did not see a case originating north of this street in that year. The next season it finished its work, taking the northern half of the city. This gradual progress of the disease is so well understood at the South that the residents of an invaded city, if living outside the district already occupied by the fever, are confidently advised by physicians to escape to the country. The disease has been known to attack all the sailors occupying the berths on one side of a man-of-war before reaching one of those upon the other side. It has been arrested by a moat; by a prison-wall; or even, as at Governor's Island, in 1856, by a thin board partition.

Now, any materies morbi which advances in this gradual and regular manner cannot be a gaseous effluvium, nor can it consist of light organic germs floating in the air. If either of these, it would be spread far more rapidly, and less independently of the winds. The only plausible hypothesis is, that it is some form of microscopic life, animal or vegetable, capable of rapid self-propagation, and lying on, and moving along, the ground. Experience has proved that, while basements are dangerous to dwell in during an epidemic, the upper stories are comparatively safe. The supposition is strengthened by other analogies to the mode of progress of known insects and fungi, such as attack cotton, grain, and other crops—the silkworm and other animals. Like some of these, the fever-germ will lie dormant for a long time, to be developed suddenly in overwhelming force. It is an affection of crowded populations, just as parasites attack the vine or the potato chiefly where their cultivation is extensive. Before 1830 the cotton-plant was nearly free from diseases; now the planter is in constant dread of them. As with most plants and insects, a freezing temperature either kills the germ or checks its development.

An important point in the natural history of yellow fever is the variability of its type. Sometimes it is extremely virulent, at others very mild. Now it will spread over vast areas in spite of every effort to arrest it; now it will remain strictly endemic, or even sporadic, and seem absolutely non-portable.

True, the high grades of bilious fever will occasionally so closely resemble the disease in question that the laws of its spreading seem to constitute almost the only distinction; and it has been doubted whether bilious fever itself may not sometimes become portable and migratory. But yellow fever is self-protecting; bilious fever is not; and neither protects against the other. Next, we have two forms of yellow fever, presenting different anatomical lesions—the one characterized particularly by the bloodless, gingerbread, fatty liver, as described by Louis and Alonzo Clark; the other by the engorged, slate-colored liver of bilious fever. These variations in type are possibly accounted for by the germ-theory. If the small-pox germ, by developing in the body of a cow, where it finds a different pabulum from its wont, may be so altered in type as to be no longer infectious, why may not the yellow-fever poison, under unknown influences, suffer such a change as to become non-portable? We see a like variation in allied species of animals and plants, one being intensely poisonous while its congener is harmless; or even in the same species at different seasons.

Again, with this, as with nearly every epidemic disease, we find it modifying more or less the type of other febrile affections prevailing within its district. So do we see scarlatina and measles mingling their symptoms, as well described by Aitken. So, in our late war, were typhoid and marsh fevers so constantly combined that "typho-malarial fever" became an established name. May not this spring from the formation of hybrids between the different disease-germs, uniting either outside the body, as probable in the case of marsh and yellow fevers, or after entering it, as probable with measles and scarlatina?

The fever on Governor's Island last year, which for so many weeks baffled diagnosis, would seem to have been of a mixed type, a connecting link between yellow fever and marsh fever. If, indeed, we should say "marsh fever;" for the several forms of marsh-malarial fevers are quite as diverse from each other as from yellow fever; yet they are commonly considered as being but different grades of the same disease, and due to a single cause in varying intensity of action. Such

an assumption is quite unwarranted; and it is far more probable that their germs belong to distinct though related species. It is no argument in favor of their identity that the several forms of marsh fevers occur in the same region and under the same influences. Thousands of animal and vegetable organisms spring into life side by side. Nor is it an argument that they are all cured by quinine. We do not account the same all the fungous growths which are destroyed by carbolic acid.

This epidemic on Governor's Island apparently belonged to the non-portable variety. It advanced slowly over the island, by its "epidemic force" (that is, by the progressive multiplication and development of its germs); but it does not seem to have been transported from one part of the island to another; and, although nine of the fifty-two fatal cases sickened and died in this city, there was no instance here of the fever's attacking persons who had not been exposed on the island. The history of other military stations shows that the removal of a regiment from an infected region, though they carry their sick with them, has often served to check the progress of the disease. The fact that the fever thus fails, sometimes, to spread widely, even where there are no measures taken to interfere with it, can be explained only on the above supposition of a distinct, non-portable type. Perhaps the most remarkable illustration of this is furnished by the epidemic prevailing in some of the Gulf ports of Mexico during our war with that country. According to Dr. Bennett Dowler, an excellent authority, while the fever was very severe in Tampico and Vera Cruz, in 1846–'48, and our troops there suffered much, yet the army, which was so largely transported in vessels, did not carry it to other ports. The escape of many of these places, in the absence of quarantine restrictions, was certainly most extraordinary.

In those instances where the disease shows no tendency to spread except by the mode of slow and regular progression from a given starting-point (as, for instance, from a pier where an infected vessel has been lying), it would seem that its further progress might be checked and the disease itself "stamped out," if only some means could be found of destroying its

germs within the infected area, while this is still limited. In view of the recent progress of sanitary science, we may certainly hope for such a result. But the process would have to be very thorough and searching. For there is reason to believe that, although yellow fever probably never originates *de novo* in temperate latitudes, yet it may often, after its seeming departure, leave its germs among us, to lie dormant perhaps for many years, until some unknown cause shall favor their development. It is said that in New Orleans, the past summer, carbolic acid has been used so freely in the streets as to give the mules sore feet; and that, whether due to this measure or not, the yellow fever has been unable to get so strong a foothold there this season as before, or as in other cities similarly accustomed to its visitations.

Dr. A. N. Bell, of Brooklyn, was surprised at some of Dr. Nott's conclusions regarding the different types of yellow fever; and especially at the point made in favor of a non-portable type, by reference to the epidemic of 1847–'48 in the Gulf of Mexico. In reality, the epidemic which extended to our Northern States in 1855–'56, should have been traced back not only to Rio, in 1850, as had been done by the doctor, but to that epidemic of 1847, in the Gulf ports, whence our own vessels carried it to Rio; and from Rio it was transported not only northward, but also for the first time to the Pacific coast, as shown by naval surgeons then in the Pacific squadron.

In 1847–'48, most of our vessels in the port of Vera Cruz, where the fever was particularly severe, became infected. The breaking out of the gold-fever, immediately afterward, took these vessels, by the way of Rio, to California. It was positively established that at least two of them, the New World, and the Quito, lost nearly all of their respective crews with yellow fever at Rio in 1851, and, shipping new ones at that place, proceeded to the Pacific, where the fever soon after occurred for the first time. The fever thus introduced was not at first recognized, but was supposed to be a new disease, and was called the *pelusa*. It was in 1852 (the speaker thought), a few months subsequent to the arrival of the New World from Rio, that yellow fever appeared in Lima. Similarly,

the Quito carried it to Callao, on the same coast. Here, as at Rio, the disease was supposed to be a new one, and was christened the *polka;* but here, as there, it was ere long discovered to be the genuine *vomito.* Finding in these regions its favorite meteorological conditions, it prevailed there for a considerable time, and has reappeared in more or less force almost every year since. Our commerce having thus started the fever on its travels, our own cities did not escape its visitation. It was even transported directly North from Vera Cruz, in 1847–'48, by several vessels with which the speaker was familiar, and on some of which he had himself served. Among them, the U. S. steamer Scorpion and frigate Congress brought it to New York.

It might not be deemed irrelevant to go many years back, and show how yellow fever was carried by the English squadrons from the coast of Africa, to points where, in congenial soil, it took root and multiplied with fearful rapidity. At one place in particular, the Island of Ascension, nearly all the natives fell its victims. But at St. Helena, on almost the same parallel, it was not communicated in a single case. In the Bights of Benin it found a deep loam of volcanic ashes, into which you might run your leg knee-deep; and there it fed on the people until none remained. In St. Helena it met only bare rock, and could gain no lodging-place, just as our street-pavements in Brooklyn stopped it in 1856.

These facts, and other conditions of its development to be mentioned presently, the speaker regarded as strongly supporting the doctrine of the organic origin of yellow fever. Dr. Nott had spoken of its sometimes mingling its type with that of marsh fevers. He would go further; and in saying that he considered the yellow-fever poison to be an intensified poison of the same nature, if not identically the same poison, as that of intermittent and bilious fevers, he was sure it was no more than his observation would justify. It was exceedingly rare to find yellow fever not preceded by, and concurrent with, various types of bilious and remittent fever. It did not seem, as a general rule, to run into these, yet it occasionally did so; as some of the worst cases he had seen could hardly be distinguished at first from bilious fever. Under this

category would fall the Governor's Island outbreak of last year.

That outbreak occurred just after a succession of heavy rains, with a continuous high temperature. Similar conditions had preceded the Governor's Island, Bay Ridge, and Fort Hamilton epidemic of 1856, but then we had large numbers of fever-laden vessels as a source of infection. Whether the fever was introduced anew upon the island last year, the speaker could not tell; but he inclined to think not—that it was simply the development, under favorable conditions, of the dormant germs left in 1856.

The apparently varying degree of portability of the disease was most probably dependent less upon distinct kinds of yellow fever than upon these meteorological conditions, and such topographical ones as above suggested. It would rarely or never get firmly established in a place except when the thermometer had stood for some time at about 80° F., and the atmosphere had been surcharged with moisture. But, once established, it might continue long after these conditions had ceased.

While a freezing temperature would not *kill* the germ, one by no means so low was sufficient to suspend its activity. In Vera Cruz, a "norther" was always hailed as a deliverer from the pestilence, though it seldom sank the mercury below 48°. In the naval service there were "yellow-fever vessels" apparently free from the scourge while in cool latitudes, but sure to feel its stroke as soon as they entered the tropics. Such vessels had sometimes been sent on a northern cruise, with the design of fairly freezing the fever out of them—a notion which to a practical seaman was about as absurd as the attempt to kill the fever in the Susquehanna. However cold the climate, the ship, while in service, was sure to be kept comfortably warm. Apart from this, probably few who had not lived on board ship had any adequate conception of the amount of filth that would accumulate between the limbers of even the best-policed vessel. When the Illinois was overhauled last spring—and, like every man-of-war, she was kept as clean as possible—they took out one hundred and fifty tons of such vile refuse, the very hot-bed soil for noxious fungi. Talk of freezing out a mass like that, in any waters where the vessel

would sail! And yet, in July, when the temperature was above 70°, they undertook to do this thing on the Susquehanna with eleven tons of ice. Early in spring a severe form of intermittent fever had appeared on board; growing worse and worse, it had become a bilious fever, malignant bilious fever, congestive fever, and, at last, black vomit, killing a large number of her crew. At the end of that cruise she came to New York, and it was here the attempt was made to freeze her out, at a cost to the Government of over twenty thousand dollars.

The speaker agreed with Dr. Nott, that we had no reason to expect the fever will not again invade our city. We know that we have sometimes the conditions here for its spread, and we cannot prevent its approach. For we have no quarantine power brought to bear upon the condition of vessels that you would not house your pigs in; where twelve or fourteen men sleep together, in a hole containing barely one thousand cubic feet of air; always wet from being right under the vessel's eyes; and never cleansed from the time she is built until she sinks. While we have no proper inspection of this matter, can we hope to escape any form of transportable disease? And even in the cleanest-looking ships we have seen what foulness is sure to lie concealed. No wonder that, in these floating cellars, yellow fever, cholera, and all their kind, revel as nowhere else. No wonder that the seeds of disease in the Susquehanna, when she passed into the torrid heats, germinated with a fatal luxuriance. Though one of the best, still she was a ship; and this means that, of all human habitations, she furnished the most complete combination of conditions for the origin and growth of disease.

The further discussion of Dr. Nott's paper was made the order for the next meeting, December 7th.

Adjourned.

Bibliographical and Literary Notes.

ART. I.—*A Practical Treatise on Fractures and Dislocations.* By FRANK HASTINGS HAMILTON, M. D., LL. D., Professor of the Practice of Surgery, with Operations, in Bellevue Hospital Medical College; Surgeon to Bellevue Hospital, New York; Consulting Surgeon to Hospital for Ruptured and Cripples; Author of a Treatise on Military Surgery and Hygiene. Fourth edition, revised and improved. Illustrated with three hundred and twenty-two Woodcuts. Philadelphia: Henry C. Lea, 1871. 8vo, pp. 789.

THE first edition of this book, which appeared in 1859, was at once acknowledged, both at home and abroad, as the best book in the English language on fractures and dislocations. This encomium has been since most emphatically indorsed by the demand for the book, which within twelve years has compelled the issue of successive editions, reaching to the fourth, which is now before us.

In this fourth edition we are glad to find the author has not contented himself with a simple reprint of the last edition. Some parts have been left out, other parts have been changed, while a good deal has been added to make the book complete to the present date.

Of the parts omitted, chiefly noticeable is the absence of much of the discussion on intra-capsular fracture of the hip-joint, which in the last edition occupied several pages.

Among the additions which have been made on the subject of fractures, the author has introduced: Moore's dressing for fracture of the clavicle; Kingsley's apparatus for fracture of the lower jaw; a full description of the different immovable dressings, especially of the plaster-of-Paris dressing, the use of which the author would limit to fractures below the knee; Hamilton's splint for fracture of the surgical neck of the humerus; Martin and Clark's method of treating fractures of the humerus; Scott's apparatus for fractures of the radius and ulna; Hamilton's method of treating fractures of the neck of the femur—this, whether within or without the capsule, consists

in the use of a long side-splint with a foot-board, and is unlike Buck's method in this, that it dispenses both with perineal band and coaptation splints; the treatment of fractures by suspension, according to the methods of Palmer and Hodgen. We observe also a transposition, from the author's book on military surgery, of his method of extension in gunshot-fractures of the femur.

Upon the subject of dislocations, have been added the views of Dr. H. J. Bigelow upon dislocations of the hip, and the relations borne to them by the ilio-femoral ligament; also, on the nature of everted dorsal dislocation, and the method of extension at right angles to the body, by means of the tripod.

An account is also given of an operation performed by the author, in which, to facilitate the reduction of an obstinate dislocation of the hip by a small external incision, he divided the ilio-femoral ligament, and also the tensor vaginæ femoris. The operation did not succeed, and we regret that, notwithstanding this, the author proposes to repeat the experiment at some favorable opportunity. The risks incurred by such a proceeding would seem to be certainly greater than the advantages to be anticipated from it.

On voluntary dislocations of the femur a short section has also been added, with reports of several cases illustrating that rare condition.

New illustrations, to the number of thirty or forty, have been added, of which those on dislocation of the ankle present a marked improvement over those used in former editions.

The feature of this fourth and latest edition which most distinguishes it from previous editions is, that it is more evidently practical, and hence still more valuable than before as a book of reference, both for the surgeon and the general practitioner.

Art. II.—*Cancer: its Classification and Remedies.* By J. W. Bright, M. D. Philadelphia: S. W. Butler, M. D., 1871.

This book consists of a compilation of the views of some thirty-eight authors who have written upon cancer; and, for

those who desire a work of reference upon this disease, it may be of some value. As to the pathology or treatment of the disease, however, the reader need seek for no new light from this work. The great aim and object of the book appear to us to consist in the advocacy of the caustic treatment for all cases of cancer, to the entire exclusion of the knife. The results which the author claims to have had from this mode of treatment are certainly remarkable, and we venture to doubt if any other practitioner could boast of the same success, in the treatment of this disease, by any method of treatment—not even those who are pecuniarily interested in *cundurango*.

We have seen caustics of various kinds used in the treatment of some forms of cancer, by others as well as by ourselves, but the results have certainly not been such as to cause us to subscribe our faith to this exclusive mode of practice, and especially for every variety of the disease. Dr. Bright, no doubt, has had a large experience with the disease of which he has compiled so much, but we doubt if all the cases he has recorded as having been cured were indeed true cancer. The period of time which had elapsed since the disappearance of the disease is not always stated in the cases recorded—a rather important matter. In speaking of the treatment by caustics, we are well aware, as seen by the reports of Dr. Marsden, of the London Cancer Hospital, that this method has proved extremely favorable in certain forms and conditions of the disease. But, at the same time, an unbiassed mind must know that the knife is the least painful and best resource that holds out any prospect of relief in very many cases. By the use of the knife alone the most favorable results have taken place, as has been shown by Mr. Paget, as well as by Mr. Sibley's and Mr. Baker's tables in the *Medico-Chirurgical Transactions*, the statistics being taken from the Middlesex Hospital: "In the cases of cancer of the breast, those who had been operated on lived fifty-three months, while those in whom the disease was allowed to run its natural course lived only thirty-two months." This is in reference to scirrhous cancer, while with the medullary form of the disease the results are still more favorable to the use of the knife, as the life of the patient by this means averages forty-four months, while, without the operation, the average of life is but twenty months.

No doubt, the profession have been too much wedded to the knife, to the exclusion of all other means; but that caustics offer the greatest chance for entirely relieving the patient from this fearful disease, in all its varied forms, is an opinion we cannot subscribe to.

ART. III.—*A New Operation for Bony Anchylosis of the Hip-Joint, with Malposition of the Limb, by Subcutaneous Division of the Neck of the Thigh Bone.* By WILLIAM ADAMS, F. R. C. S., Surgeon to the Royal Orthopedic and Great Northern Hospitals; late President of the Harveian Society; late Vice-President of the Pathological and Medical Societies of London; formerly Lecturer on Surgery, at the Grosvenor-Place School of Medicine, and Demonstrator of Morbid Anatomy at St. Thomas's Hospital. Illustrated by numerous Wood Engravings. London: J. and A. Churchill, 1871.

THIS is a small volume of some eighty pages, consisting chiefly of papers which have appeared in the *British Medical Journal*, for 1870–'71, upon this subject, together with a short account of the operation for the division of bones, and anchylosed joints, previously performed in Germany, France, and America, based more or less upon the subcutaneous division of bone.

In addition to these papers, the author has added plates illustrating eight specimens of bony anchylosis of the hip-joint, from the museum of St. Thomas's Hospital, for the purpose of showing that, with a variable amount of destruction of the head of the bone, in some cases, and none whatever in others, the operation of dividing the neck of the femur could be performed in five out of the eight cases, according to his method of operating.

Mr. Adams's operation, which he first performed on the 1st of December, 1869, on a man twenty-four years of age, for anchylosis of the hip-joint (the result of a severe attack of rheumatic fever, from which he had suffered seven years before), consists in dividing *the neck* of the thigh-bone, sub-

cutaneously within the capsular ligament. The instruments he employs are a long tenotomy-knife, and a very small saw, three-eighths of an inch in width, and with a cutting edge an inch and a half in length, at the end of a slender shank three inches in length.

The result of this operation is certainly most gratifying. No long-continued suppuration nor necrosis followed, as we know has been the case in other operations that have been done for the relief of bony anchylosis.

Nor was the patient confined to his bed for a long period, for we find that after three weeks he was able to be on foot. After walking about for a fortnight, the limb began to stiffen at the hip, and, attempts at movement being painful, Mr. Adams gave up all idea of preserving motion, and procured bony anchylosis with the limb in a straight position. The histories of seven cases, operated upon by different surgeons after this method, are given, being all that he has known of up to July 20, 1871. Six of these have been successful. The fatal case was not one of true bony, but fibrous, anchylosis, in a boy eight years old. In this case, extensive suppuration (which was absent in all the others) followed the operation, and the patient died of pyæmia, twenty-six days after the operation.

This operation is certainly not applicable in every case of bony anchylosis, for we find that in some cases both the head and neck of the bone have been more or less destroyed; but it certainly is not so in all, as Mr. Broadhurst would have us believe. This point our author conclusively proves, as it appears to us, by diagrams of specimens of true bony anchylosis of the hip-joint, from the museum of St. Thomas's Hospital, as well as by reference to other specimens. It is only in those cases where the head and neck of the bone have met with little or no destruction, that the operation would be thought of.

This operation of Mr. Adams is certainly a great improvement over both the methods of Burton or Sayre; which operations, by-the-by, can hardly be called subcutaneous section of the bone.

Whether this operation will always succeed in giving the patient a movable joint, long enough time has not elapsed to determine. Be this as it may, it nevertheless is a valuable

contribution to our art, for the purpose of removing the great deformity which we see taking place in connection with disease of the hip-joint.

This operation has attracted great attention, on the part of English surgeons, and Mr. Broadhurst has claimed that it was he who first suggested and put in practice such an operation as Mr. Adams lays claim to. In the appendix to this little volume, the letters which have passed between these two gentlemen upon this subject are presented, and from them it appears to us that Mr. Adams is entitled to the credit of having given to the profession a new and valuable operation.

ART. IV.—*Skin-Diseases; their Description, Pathology, Diagnosis, and Treatment.* By TILBURY FOX, M. D., etc. First American, from last London edition. Edited by M. H. HENRY, M. D., etc. Pages viii.–313. New York: William Wood & Co., 1871.

IT may be said of this work, with more justice than of any other with which we are acquainted, that it presents the essentials of dermatology—more or less of a bugbear to the ordinary practitioner—in a style calculated to commend them to others than professed dermatologists. This is not the best that can be said of it. It embodies the better portion of what is held and taught by those British physicians who have most studied diseases of the skin—not tinged, but brightened, by the author's thoroughly practical mind. Dr. Tilbury Fox is behind McCall Anderson in solid contributions to dermatology; his descriptions of disease are, as a rule, inferior to those of Mr. Erasmus Wilson; he does not build upon an experience as great as that of Mr. Startin; he is less catholic than Mr. Hutchinson; and yet we regard him as the leading exponent of English Dermatology. We found this opinion not so much upon the volume before us, which is not his best work, as upon an article of his which we remember to have seen, in a recent number of the *Practitioner*, setting forth the general outlines of his treatment of skin-diseases. The construction of this work is done with the sort of skill which we

look for in a journalist, putting things in the way best adapted to be utilized by the reader; and yet it smacks of the style of the clinical lecture, as taken down by a stenographer; sometimes offensively so, as when, for example, the author says, "I had almost forgotten to mention that phosphorus produces chronic ulceration, guanara (coffee-tribe), urticaria."

After a short and crisp introduction, in which the fashionable depreciation of Willan is deprecated, we come to a most excellent chapter upon the general pathology of the skin, especially meritorious in its description of the various elementary lesions. As regards the etiology of skin-diseases, Dr. Fox holds a middle ground between those held respectively by Wilson and Hebra, leaning, however, toward the views of the former, and ascribing more importance to systemic than to local causes. He wisely devotes very little space to systems of classification, adopting, with some criticism, that of the Royal College of Physicians, which, as he remarks, is a condensation of Wilson's clinical scheme.

Some excellent remarks upon the general diagnosis of skin-diseases—as deduced from the mode of outset of the disease, its duration, recurrence, and locality; from the temperament, occupation, and age of the patient, and from the diagnostic features of eruptions—are followed by some very brief precepts in prognosis and therapeutics.

The consideration of individual diseases begins on page 32, and we consider the fact that so few pages are devoted to introductory generalities one of the great merits of the book. Want of space forbids a close criticism of the body of the work, so that we can mention only a few points. Our author very properly refrains from a systematic consideration of the exanthematous fevers, giving only a summary of their diagnostic features. Erysipelas, also, he treats of very briefly, for the reason that, as he remarks, it "belongs to the domain of the general physician." In his remarks upon the prognosis of this disease, he omits to mention its almost invariable fatality in the new-born. Of frambœsia he says, "it has no relation to syphilis."

The pathology and clinical history of eczema offer a favorite battle-ground for the conflicting schools of dermatology. Our

author says (p. 66): "We find, then, clinically, that in some cases the 'discharge' feature of eczema is not so well marked as in others. It may be abortive, and then the erythematous aspect may predominate, the exudation may be slight, and only raise the cuticle into what appears to be papulation; or pus may be readily produced, or the secretion may quickly be reabsorbed, and scales be produced or fissuring result at an early stage. It has been therefore said that eczema may commence as an erythema, a papulation, a vesiculation, a pustulation, a squamation, or a fissure. I deny it. Any of these stages of inflammation and its results may be quickly arrived at or specially preserved, but in all cases the tendency is to the outpouring of a large quantity of serosity of special quality from the skin. This necessarily tends in the first place to the uplifting of the cuticle by the serosity—i. e., the production of vesiculation, which is rapidly over because the cuticle bursts, and discharges the fluid; but the tendency to free secretion exists, and is the main feature in the disease. (This is 'catarrhal' inflammation.) And this vesicular stage is generally passed when the disease comes under the notice of the physician, though vesiculation *may*, with care, be made out at the edge of a patch which is on the increase. It is manifestly unfair to estimate its value or probable occurrence in a disease which is stationary or in progress toward recovery." In a short criticism of the various theories of the pathology of eczema, Fox says that he cannot understand the "dartres," and we must confess that we share his perplexity. The diagnosis is remarkably well drawn. The author is of the opinion that eczema marginatum [Hebra], which was recently a subject of dispute between Hebra and Pick, may be made to include various diseases, and that it is not necessarily parasitic. His remarks upon this particular affection are very meagre.

Fox considers that the *strophulus* of authors is in some cases a true lichen, but that the simple forms should be classed as disorders of the sweat-glands.

Our author has brought about the recognition of a disease which he terms *impetigo contagiosa*, and gives an admirable description of its clinical history. "In some instances," he remarks, "the disease resembles vaccinia very closely." In

the cases which we have seen, the efflorescence has borne a remarkable resemblance to a somewhat common form of so-called spurious vaccinia, the most striking character being a *sprawly* vesiculation. The marked character of the disease cannot be doubted, but we are inclined to consider the term *impetigo* as a misnomer. Its general diagnostic features are thus given: "Its apparently epidemic character in many cases; its attacking children; the antecedent febrile condition; the origin from isolated vesicles, which tend to enlarge into blebs, and to become pustular, the bleb having a depressed centre, and, it may be, a well-defined, slightly-raised, rounded edge; the *isolation* of the spots, the *uniform* character of the eruption, and its general and scattered condition; its seat, and frequent commencement about the face or head; the circular, flat, granular, yellow crusts; its contagious nature and inoculability; its frequently following in the wake of vaccination; the implication of the mucous membrane of the eye; the absence of pain, and especially troublesome itching at night."

Dr. Fox gives us a remarkably clear description of rodent ulcer, which he regards as "the least expressed form of the cancerous cachexia."

The chapter upon the syphilo-dermata opens with some excellent introductory remarks, which lead to the consideration of the various syphilides, arranged according to the predominance of one or another elementary lesion. Syphilitic onychia receives rather scant consideration.

The American editor has interpolated, among the hypertrophic diseases, Hebra's recent description of a curious scleromatous affection of the nose.

The chapter upon parasitic diseases is excellent, particularly with regard to the tineæ, and contains some valuable observations upon "army-itch." We find no allusion to a non-parasitic sycosis, but its recognition is implied in the use of the term "parasitic sycosis."

Our author holds prurigo to be of neurotic origin, but, recognizing it as a papular disease, avoids the error of confounding it with the mere condition of itching expressed by the term *pruritus*.

The body of the work closes with a consideration of the chromatogenous (*sic*) diseases, and the disorders of the glands and appendages of the skin. We find no special notice of alopecia areata, but observe the casual, and, we think, erroneous, statement that "parasitic disease is the most usual cause of *localized* baldness."

A supplementary "summary," chiefly referring to classification; a formulary of some two hundred prescriptions; a list of the principal mineral waters which have been found useful in the various skin-diseases, the latter borrowed from Dr. Althaus; and a "glossarial index," which is to be specially commended, fill up the remainder of the volume.

Dr. Fox's work was originally published as a hand-book, and as such it deserves to be extensively used. That it will be very largely referred to by the dermatologist of the future we do not believe, but neither do we suppose that its author expects this. We consider it a thoroughly safe guide to the practitioner, and therefore welcome it as filling an hiatus.

The volume before us is, in mechanical execution, an immense improvement upon the English edition. Even the woodcuts are, for the most part, tolerably well done, whereas in the original they were wretched. The binding is particularly attractive. To be hypercritical, we notice that two different qualities of paper have been used.

ART. V.—*Essay on Growths in the Larynx; with Reports, and an Analysis of One Hundred Consecutive Cases treated by the Author, and a Tabular Statement of all Published Cases, etc.* By MORELL MACKENZIE, M. D., Lond., M. R. C. P. Philadelphia: Lindsay & Blakiston.

THIS is Dr. Mackenzie's long-promised Second Essay, the publication of which was expected last year. In the first chapter the author reviews the history of observations of laryngeal growths since Koderik's successful removal of a polypus in 1750, and brings the reader down to the present date. The rest of the essay is devoted to the discussion of the causes, course of development, and symptoms, of the

many varieties of tumors, and to a short chapter on diagnosis succeed a long one on pathology, and a still shorter one on prognosis. A comprehensive and instructive "section" on treatment ends the essay proper.

To this are added four appendices of reports of cases, which to the experienced practitioner will naturally be the most valuable portions of the work, for they are indeed the most perfect and satisfactory tabular record that any laryngoscopist has ever presented to the profession, and must for many years to come be the standard table of operations and results to which surgeons will refer, and which all may study with profit.

To the student who begins to seek authorities and reliable information on this subject, this essay will especially recommend itself, the more so if he be ignorant of the German language.

Until Dr. Mackenzie gave us this book, the American or English laryngoscopist, who would study "Growths," after exhausting the elementary papers of our author, and reading the scattered lectures and published articles of George Johnson, Marcet, Sir D. Gibb, Henry B. Sands, and the few others whose experiences are recorded in English, was at the end of his investigations, unless a "reading knowledge" of German could open to him the large and profitable field which the published treatises and occasional papers of Czermak, Türck, Tobald, Von Bruns, Schroeter, Lewin, and other German and Austrian surgeons offered to him, few of which are as yet translated in available forms. Now, this "Second Essay" gives to such a student the pith of all that has been written by his German and French brethren who have labored in this field for the past twenty-five years, and the respected views besides of the author of the work—than whom no more enthusiastic or successful laryngoscopist writes and works for us. So much for the second three sections—on causes, symptoms, and diagnosis.

As regards the "Pathology," Dr. Mackenzie is less impressive and decided, as he is less original, writing carefully, and quoting Virchow and Paget; and more confidently when he gives us the microscopic analyses of growths made for

him by Drs. Clark and Fenwick, who are both already known to Americans, one as physician, and the other as assistant-physician, to that progressive school, the London Hospital, in which Dr. Mackenzie holds high rank.

In the section on treatment we have a faithful consideration of the many plans for removal of growths by mechanical means. Of course, the author prefers the instruments which he uses daily, and he does not conceal his preference—which is pardonable. Yet, though he does not abuse the contrivances of other surgeons, he does not *insist* upon his own. It is to be regretted that he has not described in detail the principle and use of the *Viennese* "handle" for laryngeal instruments, which has a double curve, and enables the operator to keep his operating hand always out of the axis of vision—the instrument which has lately been so useful in the hands of Schroeter and his pupils. He does not cheerfully recommend the galvano-cautery—partly because Von Bruns dislikes it, and partly because he has not made it work well in the three cases in which he has employed it. The French operators of the past five years think highly of it as a painless and rapid means for removal of laryngeal growths, when they are large enough to be engaged in the loops. To this and other "chemical" *modi operandi* our author certainly prefers the knife or scissors.

Before concluding his article on treatment, he gives us a very valuable "Thyrotomy Table" which professes to "show results," as regards "life and voice," "in which thyrotomy was performed" for removal of growths. This table must go on record; it is new, and the result of Mackenzie's researches as far back as 1833. In it we notice the honorable names of our most distinguished American laryngoscopists. This is almost the end of the essay proper, but we cannot dismiss the book without referring again to the invaluable appendices which are added.

Appendix "A" contains reports of *one hundred* cases treated by the author, and Appendix "C" gives us the same in tabular form. Each case is illustrated by a very bad wood-cut, which, however, neither adds to nor detracts from the real interest of the matter proper. These are copies of his own

notes taken from 1862 to 1870, and are of immense statistical importance. These two "appendices" go with another, "B," which is a report of twelve more cases, observed by Dr. Mackenzie in his practice, in which radical treatment was not attempted.

The experiences of all other laryngoscopists and surgeons who have removed tumors from the larynx receive due notice and honor in Appendix "D," which is a table of one hundred and eighty-nine cases, and the evident and useful result of much labor on the part of the author, who has collected them from every side.

At the last we have a few chromo-lithographs, and very badly are they executed. They are out of place. The colored illustrations in Türck's book are almost Nature herself; those in the work which we review are wretched, and unworthy the honorable place which they occupy.

As a whole, we recommend this Second Essay of Mackenzie to the profession, and, as a work which contains much that is new and cannot be found elsewhere, we bespeak for it a welcome in America.

It is due to the Philadelphia publishers to add that they are not responsible for the miserable woodcuts and abortive chromos, as the sheets are from "Wyman & Sons, Lincoln's Inn Fields, London."

ART. VI.—*Chemistry, General, Medical, and Pharmaceutical, including the Chemistry of the U. S. Pharmacopœia. A Manual of the General Principles of the Science, and their Applications to Medicine and Pharmacy.* By JOHN ATTFIELD, Ph. D., F. C. S., etc., etc. From the second and enlarged English edition. Revised by the author. Philadelphia: Henry C. Lea, 1871.

So far as our observation extends, the common difficulty with chemical text-books in use in medical schools is, that they are intended for students of general chemistry, and the medical student is bewildered by the mass of (to him) useless matter, and disappointed by the lack of detail upon his especial branch.

The experience of the author of the book before us, as professor of practical chemistry to the Pharmaceutical Society of Great Britain, would lead us to expect from him a book of a different character from those now in use. This expectation is realized. The work is constructed with direct reference to the wants of medical and pharmaceutical students; and, although an English work, the points of difference between the British and United States Pharmacopœias are indicated, making it as useful here as in England.

As each element is taken up in order, its officinal preparations are mentioned, and the chemical reactions occurring pointed out. The remedies of an organic origin are considered as well.

Analysis, qualitative and quantitative toxicology, the examination of urine, and calculi, are treated of with sufficient detail for those who do not desire monographs upon the subjects.

Not the least of the conveniences of the book are its tables and its very complete index. As far as has seemed prudent, the nomenclature and notation have been conformed to the recent advances in chemistry. We have noted but few typographical errors in the equations.

Altogether, the book is one we can heartily recommend to practitioners as well as students.

ART. VII.—*Stimulants and Narcotics, medically, philosophically, and morally considered.* By GEORGE M. BEARD, M. D. New York: G. P. Putnam & Sons, 1871.

As the title indicates, Dr. Beard's little book goes over a very wide field of inquiry. Its four chapters are devoted to: 1. The various substances used by different races to produce intoxication; 2. The effects of these substances, and the conditions modifying their action; 3. The general subjects of intemperance as manifested in different parts of the world; and 4. The moral, social, and economic aspects of the use of stimulants and narcotics.

Of course, a discussion of so many important topics, which is contained in a hundred and fifty pages, cannot be in any

degree exhaustive, but must be simply a sketch. The work is, doubtless, meant for popular reading, and has two of the essentials of a work designed to instruct, viz., research and fairness. The author has evidently been at considerable pains in seeking for facts and information, and has made these facts, and not preconceptions, the basis of what he has to say. Whether he can find readers who have the same spirit, is a matter of doubt, for nowhere, than in the discussion of this whole subject of stimulation, is the habit of letting our desires select our facts, instead of our facts guide our opinions, more prominent—so prominent, indeed, as to recall the witticism of one of our friends: "Reason, sir, was not given us to form our opinions, but to defend them when formed."

To those, however, who do wish to inquire a little before forming an opinion, we may recommend Dr. Beard's little book, both for the information contained in it, and the reference given to other works.

ART. VIII.—*Transactions of the Indiana State Medical Society*, 1871.

AMONG the various papers that appear in this volume are a number relating to the subject of midwifery, of which there are five, viz.: Placental Extraction and Placental Expression, by Theophilus Parvin, M. D., of Indianapolis; Anæsthetics in Midwifery, by Dougan Clark, M. D., Richmond; A Plea for Anæsthetics in Midwifery, by Lunsford P. Bundell, M. D., Louisville, Ky.; Chloroform and Chloral in the Treatment of Puerperal Convulsions, by Wilson Hobbs, M. D., Carthage; Prevention and Treatment of the Laceration of the Perinæum, by T. B. Harvey, M. D., of Indianapolis. The paper of Dr. Parvin, on Placental Extraction and Placental Expression, is a carefully-written thesis on the management of the delivery of the placenta in abortion, and labor at full term, and one worthy the attention of the profession. The method of dealing with the placenta after labor, which Dr. Parvin advocates, is essentially that advocated by Prof. Crédé, of Leipsic, in 1853. In the first ten years of his prac-

tice, Dr. Parvin says he had "six cases of *post-partum* hæmorrhage; but, since pursuing essentially the practice advised by Crédé, I have not had a single case of this accident, nor have I had a single case in which the placenta was not delivered within, at the most, ten minutes after the birth of the child."

The article on the Prevention and Treatment of the Laceration of the Perinæum, by Dr. Harvey, treats concisely not only of the different modes that have been adopted for the relief of this accident, but reviews the many procedures that are used to prevent its occurrence, and on this subject he says, with much truth, we believe, that "it becomes a question worthy of thought whether the best methods of support are capable of accomplishing as much toward preserving the perinæum intact as we have been taught to believe."

A paper on Self-Pollution in Children, by H. P. Ayres, M. D., of Fort Wayne, Ind., is one which we would be glad to see read, not only by medical men, but by teachers in both our male and female academies.

The only other paper which space permits us to notice is one on Exophthalmic Goitre, by G. W. M. Kemper, M. D., of Muncie, Ind. The writer has tabulated seventeen well-marked cases, one of which has been under his own observation. Having no new theory to offer in regard to the pathology of this disease, he briefly relates the various views that others have advanced, together with the different modes of treatment that have been pursued. Though this paper makes no pretence at originality, it nevertheless will be found a valuable one for reference.

ART. IX.—*First Help in Accidents, and in Sickness; a Guide in the Absence or before the Arrival of Medical Assistance.* Boston: Alexander Moore, 1871.

THE object of this book, as stated on the title-page, is simply to inform non-medical readers what to do in cases of accident or sudden illness before the arrival of a physician. The directions given are such as may be understood by any one

who can read, but the style of writing might have been much better without any sacrifice of perspicuity. The authorship of the work is dubious, but we are told in the preface that much of it was written by "eminent physicians," and that the editors of *Good Health* are responsible for the remainder.

ART. X.—*A Treatise on Diseases of the Nervous System.* By WILLIAM A. HAMMOND, M. D., Professor of Diseases of the Mind and Nervous System, and of Clinical Medicine, in the Bellevue Hospital Medical College; Physician-in-Chief to the New York State Hospital for Diseases of the Nervous System, etc., etc. With Forty-five Illustrations. Second edition, revised by the author. New York: D. Appleton & Co., 1871. 8vo, pp. 750.

THE rapid sale of the first edition of this work affords a striking evidence of the interest taken by the profession in the methodical study of diseases of the nervous system. The second edition has undergone a careful and thorough revision by the author, and some portions of the volume have been considerably modified.

ART. XI.—*Emergencies and how to treat them. The Etiology, Pathology, and Treatment of the Accidents, Diseases, and Cases of Poisoning, which demand Prompt Action. Designed for Students and Practitioners of Medicine.* By JOSEPH W. HOWE, M. D., Visiting-Surgeon to Charity Hospital, Lecturer on Surgery in the Medical Department of the University of New York, Fellow of the New York Academy of Medicine, etc. New York: D. Appleton & Co., 1871. 8vo, pp. 265.

THIS volume does not meet any very obvious want in medical literature, though it will doubtless be acceptable to a large class of readers. The cases of emergency commonly

met with in general practice are discussed in a concise and vigorous style. The work contains much valuable information, and bears evidence of a thorough practical acquaintance with the different branches of the profession. The author seems to possess a peculiar aptitude for imparting instruction, as well as for simplifying tedious details. His experience as a medical teacher has enabled him to sift important elements from the mass of verbiage and superfluous theories which often surround them, and place them in a compact and intelligible form. He has not confined himself to a mere collection of symptoms or varieties of treatment, but has given some space to etiology and pathology, besides illustrating the effects of remedial agents in different morbid conditions by cases from his own hospital practice. Differential diagnosis has not been neglected. In separating the various forms of coma, convulsions, etc., and bringing out the prominent points which distinguish them, the author shows much skill in condensation. The chapter on placenta prævia offers a marked contrast to the rest of the book. It lacks point and clearness, and was evidently written in a hurry. Several operations are mentioned, without an item of detail to guide the practitioner in their performance. Such a grave omission is to be regretted. Taken as a whole, however, the work is excellent of its kind, and a careful perusal will amply repay the student or practitioner.

William Wood & Co. have the following books in preparation: Hand-Book for the Laboratory. Practical Exercises for Students in Physiology and Histology. Edited by Profs. Burdon-Sanderson and Michael Foster, with the Coöperation of Dr. Brunton (for Physiology) and Dr. E. Klein, of Vienna (for Histology). Experimental Investigation of the Action of Medicines. A Hand-Book of Practical Pharmacology. With Woodcuts. By T. Lauder Brunton, M. D., D. Sc. On the Functional Diseases of the Renal, Urinary, and Reproductive Organs. By D. Campbell Black, M. D. Memoranda of Ophthalmology and Otology. By D. B. St. J. Roosa, M. D. 32mo.

A Handy-Book of Prescriptions. Selected from the most Eminent Living Authors. 32mo. Hand-Book of Chemical Technology. By Dr. Rudolf Wagner (of Wurzburg). With 336 Wood Engravings. Translated from the eighth German edition, and edited by William Crookes, F. R. S., Editor of the *Chemical News*. 8vo. Memoranda of Physiology. By F. A. Castle, M. D. 32mo.

The Amateur Microscopist; or, Views of the Microscopic World. A Hand-book of Microscopic Manipulation and Microscopic Objects. By John Brocklesby, A. M., Professor of Mathematics, etc., in Trinity College, Hartford, Conn. Illustrated with two hundred and forty-seven figures on wood and stone. New York: William Wood & Co., 1871.

Notwithstanding the numerous works already published on the use of the microscope, there is room for one addressed solely to the wants of amateurs, and giving within a small compass clear directions for the use of instruments of moderate power, with illustrated descriptions of many of the common objects. These requirements are well fulfilled in this little volume, and the drawings, many of which are original, are admirably executed. Beginners cannot procure a better elementary work.

The Complete Anatomical Remembrancer, or Pocket Anatomist: containing a Concise Description of the Structure of the Human Body. Third edition. With Corrections and Additions. By C. E. Isaacs, M. D. New York: William Wood & Co., 1871, pp. 265.

These little pocket-books, of which the publishers are issuing a uniform series on the different departments of medicine, answer a useful purpose to students and others who are preparing for examinations. Containing a multitude of facts stated in the briefest possible language, they serve to jog the overladen memory; and sometimes, when every moment is of value, they may save the time that would be spent in reference to larger volumes. As books of *study* they are worse than useless.

Books and Pamphlets Received.—A Contribution to the Treatment of the Versions and Flexions of the Unimpregnated Uterus. By Ephraim Cutter, A. M., M. D. Reprinted from the Gynæcological Journal. Boston: James Campbell, 1871.

A Text-book of Pathological Histology; an Introduction to the Study of Pathological Anatomy. By Dr. Edward Rindfleisch, Professor of Pathological Anatomy in Bonn. Translated from the second German edition, with permission of the author, by William C. Kloman, M. D. Assisted by F. T. Miles, M. D., Professor of Anatomy, University of Maryland. With two hundred and eight Illustrations. Philadelphia: Lindsay & Blakiston, 1872. 8vo, pp. 695.

The Science and Practice of Surgery. By Frederick James Gant, F. R. C. S., Surgeon to the Royal Free Hospital; formerly Surgeon to Her Majesty's Military Hospitals, Crimea and Scutari. Illustrated by four hundred and seventy Wood Engravings. Philadelphia: Lindsay & Blakiston, 1871. 8vo, pp. 1,265.

Pathological Anatomy: The Necessity for its Study, and its Influence upon Medicine as a Science. Read before the New York State Medical Society. By S. Oakley Vanderpoel, A. M., M. D., President of the Society. Reprinted from the *American Journal of Insanity*, for July, 1871.

Fistula, Hæmorrhoids, Painful Ulcer, Stricture, Prolapsus, and other Diseases of the Rectum, their Diagnosis and Treatment. By William Allingham, Fellow of the Royal College of Surgeons of England, etc., etc. London: J. & A. Churchill, 1871.

Fecundity, Fertility, Sterility, and Allied Topics. By J. Matthews Duncan, A. M., M. D., L. R. C. S. E., etc., etc., etc. Second edition, revised and enlarged. New York: William Wood & Co., 1871.

The British and Foreign Medico-Chirurgical Review, and Quarterly Journal of Practical Medicine and Surgery. No. XCVI. October, 1871. London: J. & A. Churchill.

The Annual Ovation delivered before the Medical Society of London, on May 1, 1871. By William Cholmeley, M. D., F. R. C. P., etc. London: J. & A. Churchill, 1871. Pp. 35.

Thèse pour le Doctorat en Médecine, présentée et soutenue à la Faculté de Médecine de Paris, par Mary C. Putnam, Docteur en Médecine. Paris: A. Parent, 1871.

The Clinical Thermometer: its Lessons and Teachings tentatively expressed in Numbers. By Z. C. McElroy, M. D. Reprint from the *Medical World*. New York: William Baldwin & Co. Pp. 17.

Centennary Address delivered before the Society of the New York Hospital. By James William Beekman, Monday, July 24, 1871. Published by the Society.

The Relations of Epilepsy to Insanity and Jurisprudence. By W. J. Conklin, M. D., Assistant Physician of Southern Ohio Lunatic Asylum, Dayton, Ohio. Pp. 43.

A Manual of the Anatomy of Vertebrated Animals. By Thomas H. Huxley, LL. D., F. R. S. London: J. & A. Churchill, 1871. 8vo, pp. 510.

Transactions of the State Medical Society of Michigan. Lansing: W. S. George & Co., 1871. Pp. 64.

Effects of Psychological Influence upon Disease. By T. A. Foster, of Portland. Pp. 20.

Fifty-first Annual Circular and Semi-Centennial Catalogue of the Medical College of Ohio.

Miscellaneous and Scientific Notes.

Condurango.—A circular, headed "Fluid Extract of Condurango," and containing quotations from an article in a former number of this JOURNAL, forces us to notice the unsavory methods by which the gentlemen concerned in its manufacture are seeking to stimulate the sale of this new and (judging from the testimony of others than interested parties) probably worthless remedy.

The circular in question begins by furnishing us with the reasons which inspire the eminent philanthropists who offer it for sale, "to make known all the facts connected with its discovery." "Condurango," it poetically informs us, "has already by its wonderful effects manifested its title to a place among the names which have pleasant memories clustering around them; memories of happy sunlight restored to homes over whose thresholds the shadow of death was creeping in that horrible shape cancer. . . . On the fertile slopes of the grand old Andes Mountains. . . . close by the original home of the cinchona, is the birthplace of condurango." It seems that "there is a tradition among the natives of the region, that an Indian woman unintentionally cured her husband, who suffered from a painful cancer" (we are not told whether said natives were at the time acquainted with Dr. Speir's paper on the diagnosis of the disease), "by giving him to drink bowlsful

of the decoction of condurango" (we trust that one hundred dollars per pound is not the habitual price of the plant upon "the fertile slopes of the grand old Andes Mountains"), "believing and hoping it would prove fatal." Strange to say (possibly on account of its exorbitant price), there does not appear to have been a great rush on the part of the cancerously-affected for the precious remedy in the land where the condurango-vine twineth. But there comes upon the stage a governor "whose heart is brimful of charity, and his life of good deeds." This gentleman cures a negro in six weeks of a foul ulcer, with condurango. He thereupon goes to Quito, taking some of the vine with him, and the cures there wrought in the hospital first called the attention of the President of the republic to another source of revenue to his government (*sic*), and blessing to mankind. We are thus prepared to understand the resolve to send some of the plant, with description of its virtues, to the capital cities of the principal countries in Europe and America. To convince the skeptical, quotations are furnished from an article published in this JOURNAL, and written by one of the present manufacturing firm of Bliss, Keene & Co. An extract from a letter, written by the Vice-President of the United States, informs us with statesmanlike precision: "You can tell your friends when they obtain it" (the condurango), "that on the fourth day they will notice an improvement, and that by the ninth day they will see for themselves that the cancer is going away;" and again, Dr. Keene furnishes us with the assurance that, during a three-months' residence in Ecuador, he succeeded, by actual experiment upon twenty cases of syphilis, and other chronic diseases, in substantiating the official reports, etc. Dr. Bliss is further rather vaguely represented as continuing to treat with uniform success (!) a few cases of cancer that came under his observation. It seems, however, that there are some doubting Thomases who discredit this disinterested testimony. They are thus handsomely rebuked: "Articles have from time to time appeared in newspapers and journals, written by medical men, condemning condurango as worthless. . . . The articles thus referred to were not dictated by a desire to place in the hands of suffering humanity the only means for their relief, but by that spirit

which is ever clogging the wheels of progress, and crying, 'Wait, wait, until the golden opportunity" (for Bliss, Keene & Co.?) "is lost." The usual testimonials follow. The Hon. Rumsey Wing says: "Only last night I was informed, from the most eminent sources in the land" (Ecuador), "that some of the cures performed were truly miraculous." The inevitable clergyman, whose presence in spermatorrhœa pamphlets we all are familiar with, adds his cautious mite of evidence. His wife's cancer appears to be very gradually yielding to the remedy. The other testimonials are of equal value.

We think the writer of the circular is guilty of injustice, in speaking of condurango as the "only means of relief." "What a blessing," said a bright little lady of our acquaintance to a gentleman, whose wife was dying of uterine cancer, "to know that she can be cured with cranberry-juice and dock-leaves!" Again, in a village of fifteen hundred inhabitants, where the writer occasionally spends a few days in summer, there lives a "doctor," who has already drawn over sixty cancers up by the roots, from the tissues of various respected members of that tainted community! Surely condurango has its rivals.

We shall be happy to receive further evidence regarding the properties of the new remedy, but must insist, in future, that it be furnished by some one in nowise interested in its sale or manufacture.

Etiology of Puerperal Catarrh of the Bladder. [*Arch. für Gynæcol.*, vol. ii., pt. 2.]—It is well known, says Olshausen, that many lying-in women suffer from ischuria, during the first days after the birth. For the majority of cases the explanation of Mattei suffices, that the urethra has suffered, through the sudden ascent of the uterus, a certain stretching, and thus becomes impervious. This agrees with the observation that catheterization is often difficult, but that after one or two introductions of the instrument the ischuria disappears. Other forms of ischuria depend on a swelling of the vulva which extends into the urethra—and still others on inflammation of the peritoneal covering of the bladder, which has produced a paresis of the detrusor. More difficult of explanation

is the phenomenon, that lying-in women often feel no pressure of urine even when the bladder is much distended. Dr. Olshausen gives the following hypothetical explanation of this: It is probable that the pressure of urine is relaxed by a reflex action of the upper or middle portion of the urethra; now, from the above-mentioned straining of the urethra, no urine appears to be able to reach the spot in question, and hence the reflex action is absent. Nevertheless, the ischuria is in not a few cases to be attributed to a true catarrh of the bladder, and it appeared striking to Dr. Olshausen that catarrh of the bladder occurred comparatively frequently after catheterism by competent hands. In the exclusion of other injuries, Dr. Olshausen feels justified in assuming that the introduction of the lochial discharge, by means of the catheter, into the urethra and bladder—which by the shortness of the female urethra is quite possible—is the cause of this frequently occurring, but too much neglected, inflammation of the female urinary apparatus. Whether the lochia itself, or the vibriones therein contained, be the hurtful agents, Dr. Olshausen does not touch upon.

(From this we gather that, in practice, catheterism should not be effected beneath the coverings, or at least not until after a scrupulous cleansing of the external genitals).

Roosevelt Hospital.—This institution was formally opened for the reception of patients on the 2d ult. The portion of the building now open will accommodate about one hundred and fifty patients, but, when complete, there will be ample room for four hundred. The following is a list of the trustees and medical officers:

Trustees.—George T. Trimble, Frederick E. Mather, Edwin Clark, Ed. Delafield, Augustus Schell, John M. Knox, Royal Phelps, James E. Roosevelt, Adrian H. Muller.

Officers of the Board of Trustees.—President, Dr. E. Delafield; Vice-President, A. H. Muller; Treasurer, George T. Trimble; Secretary, John M. Knox; Finance Committee, Edwin Clark, Augustus Schell, Royal Phelps; Building Committee, Ed. Delafield, George T. Trimble, and A. H. Muller.

Medical Board.—Consulting Physicians, Drs. Alonzo Clark, John T. Metcalf, Willard Parker. Attending Phy-

sicians, T. Gaillard Thomas, William H. Draper, Francis Delafield, Robert Watts, Thomas M. Markoe, H. B. Sands, Erskine Mason, and Robert F. Weir. Pathologist, Francis Delafield, M. D.

Officers of Medical Board.—President, Alonzo Clark; Vice-President, T. M. Markoe; Secretary, Robert Watts.

Committee of Inspection.—Drs. Draper and Weir.

Committee on Examinations.—Drs. Sands, Watts, and Delafield.

Superintendent.—Dr. Horatio Paine.

House Physician and Surgeon.—William H. Schuyler, M. D.

Appointments and Changes.—Dr. Headland, senior physician to the Charing-Cross Hospital, London, has been elected to the professorship of Medicine, left vacant by the death of Dr. Hyde Salter. Dr. Headland is succeeded in the chair of Materia Medica by Dr. Douglass Powell. Dr. G. W. Davidson has been chosen Professor of Comparative Anatomy in the Royal Veterinary College, Edinburgh. Dr. Alleyne Nicholson, late Lecturer on Natural History in the Edinburgh Medical School, has been appointed Professor of Natural History in the University of Toronto—the position left vacant by the death of Prof. Hincks. M. Nélaton has announced his intention of residing permanently in England. Prof. Kursten, of Vienna, who made himself so obnoxious by the severity of his examinations in botany, has been suspended from the performance of his functions. Dr. A. P. Lankford succeeds Dr. Paul F. Eve in the chair of Principles of Surgery and Topographical Anatomy in the Missouri Medical College. In the New Hampshire Medical College, Dr. E. E. Phelps takes the chair of General Pathology, and Dr. E. P. Frost that of Theory and Practice. At a recent meeting of the Board of Trustees of the Massachusetts General Hospital, Dr. Henry P. Quincy was appointed artist of the institution. Dr. W. M. Wood has resigned the position of Chief of the Bureau of Medicine and Surgery, U. S. N., and Dr. Jonathan M. Foltz has been appointed in his place.

Cold Ablutions in Fever in Puerperio.—Dr. Meding resorted, in two cases (*Arch. f. Heilk.*, 12, 3, *Rundsch.*, August, 1871)

of a high grade of fever in puerperio, to repeated cold ablutions, and is especially pleased with the result. The patients had a temperature of 41.5, and one case was highly somnolent. "As long as the ablutions" were repeated regularly every hour, the temperature fell, regular sleep followed, and the mind became clear. Generally, however, when the ablutions were omitted, the temperature again rose, to fall again after energetic ablution. He is further convinced that the temperature may be more rapidly diminished when all medical treatment is omitted. Of the author's cases the result, a recovery, is given in one instance only; his diagnosis in this case was "a typhous form of puerperal fever."

A New Anæsthetic. [*Berlin Med. Ges. Rundsch.*, August, 1871.]—Dr. von Langenbeck employed in six important operations, as an anæsthetic, the æthylid chloride, and found the same possessed many advantages over chloroform. The narcosis occurs more rapidly (from one to three minutes at most), and all unpleasant phenomena are absent, such as congestion, cough, vomiting; the narcosis is quiet, and no suffocative phenomena, and no changes of the pulse, occur. (The editors are informed that, unfortunately, at the end of July last, a patient, on whom the operation of resection of the nervous infra-orbitalis was to have been performed, died during the operation under the use of this medicine).

Chicago Medical Journals.—The October number of the *Chicago Medical Journal* was ready for delivery to subscribers at the time of the fire, but was entirely destroyed, together with all the books of the office. The editors announce their intention of resuming publication immediately. The *Chicago Medical Examiner* for October was destroyed also. We understand that all lost numbers of both journals will be supplied as early as practicable.

A Rare Tumor.—Within a period of ten weeks, says the *Australian Journal*, there developed, at the upper part of the sternum of a girl of fourteen years, a vascular tumor of the size of a plum, which projected by ulceration through the skin.

The tumor was constricted within eight days, by means of eight single ligatures; the wound healed rapidly and well. No examination of the tumor took place.

Rush Medical College.—We learn, with much regret, that this college and its contents were utterly destroyed in the late fire. The class is said to have been the largest ever assembled in Chicago, and a majority of the students have already returned, a lecture-room having been secured in the City Hospital. A new building will be erected at once.

Morality abroad.—The *Lancet*, in an article of which the Bowlsby case is made the text, says it is probable that the procuring of abortion is as much a trade in London as in New York, and that the difference in favor of the former place is only in the smaller degree of publicity that is given to the nature of the business.

Death from an Anæsthetic.—The *Medical Times and Gazette* reports the death, in Oxford, of a woman forty-four years of age, from the inhalation of a small quantity of bichloride of methylene. The patient was about to undergo an operation for cancer of the breast. No mention is made of a *post mortem*.

Women-Students of Chemistry.—At the conclusion of his inaugural address, says the *Medical Times and Gazette*, the Professor of Chemistry at Newcastle, Mr. A. Friere-Marreco, stated, on behalf of himself and Prof. Herschell, that they were prepared to receive lady-students on exactly the same footing as other students.

Another Surgeon disabled.—We read with regret that Mr. Holmes Coote, Senior Surgeon to St. Bartholomew's Hospital, has been obliged to desist from his labors, on account of the critical condition of his health, which demands for the present absolute rest of body and mind.

A Medical Clergyman.—Dr. Crossberry, a medical practitioner in Jamaica, W. I., has been ordained a minister by the bishop of that island. He has no intention, however, of abandoning his first love, and will fill no office in the Church.

Relief for Chicago Physicians.—At a meeting of the relief committee for the medical profession of Chicago, held October 28th, the following statement for publication was read and approved:

The terrible calamity which has recently fallen upon the city of Chicago and upon various portions of the Northwest has awakened the sympathy of the world, and both money and material have been sent to thesuffering districts with an abundance and alacrity which have never before been witnessed; but no one who has considered the extent of the losses, or the amount of suffering entailed, can feel any apprehension that the work of charity is likely to be overdone, nor, indeed, that it will be possible to fill the measure of the actual want. There ought to be no relaxation in these general measures of relief for many months to come, nor is it probable that there will be; but there is one class whose misfortunes appeal most especially to the members of our profession. More than a hundred physicians in Chicago, and probably as many more in other portions of the Northwest, have lost all they possessed. The intelligence received by us, from trustworthy sources, is of the most painful character; and it is with reluctance that we make public the fact that up to this moment seventy-seven physicians in Chicago alone have been driven to the necessity of placing their names upon the list of those requiring pecuniary aid. God forbid that we should delay to give them help! We beg you to reflect that the situation of these physicians, with their families, is peculiar. The laborer may find immediate employment at his usual wages; the merchant may buy and build upon his credit; the clergyman has his congregation, much less able to pay than formerly, but nevertheless responsible for his support. The physician has ordinarily none of these resources. With neither house nor furniture, horse, carriage, nor instruments, he must do what little he can, and wait the slow returns from a population reduced, like himself, almost or quite to beggary. Our calling is never a lucrative one, but in Chicago to-day it can hardly be expected to supply the necessities of life, and perhaps not for a year to come.

In our opinion these seventy-seven doctors, and probably as many more, will need from five hundred to a thousand dollars each, to carry them safely through the year, and to put them once more upon their feet. From fifty thousand to eighty thousand dollars is our lowest estimate of what should be sent to the Chicago doctors' relief fund; with this money they may be placed upon salaries, and in return perform such public services among the sick and poor as may be required.

We have already received from the physicians of New York over five thousand dollars, of which sum four thousand has been sent to Chicago. The remainder is retained for the purpose of aiding the physicians of Wisconsin and Michigan, and will be forwarded to Chicago or elsewhere as soon as we receive information as to where it is especially needed. Many of the other large cities have sent in similar contributions. We have no means of knowing how much has been contributed, but we have no doubt the sum is totally inadequate to meet the exigencies of the case. It is proposed, therefore, to continue the organization of the committee, and not to cease efforts during the winter, unless its services should seem to be no longer required.

To physicians living in scattered districts we take the liberty of suggesting organized action through county or other local associations. Those who prefer can send their contributions direct to Walter Hay, M. D., Secretary of the Chicago Relief Committee, No. 384 Michigan Avenue, Chicago; or to the Treasurer of this Committee, Samuel T. Hubbard, M. D., No. 27 West Ninth Street, New York. We earnestly hope that no physician in the United States will omit to contribute something, however small the amount may be, to this charity —in any way and through any channel they may choose—but that they all give, and that speedily. If our medical brethren knew only a few of the examples of individual suffering which have come to our knowledge, but which we do not feel at liberty to publish, their contributions would not be delayed.

Surgical instruments may be sent to the following surgical-instrument makers in this city, by whom they will be forwarded free of charge: George Tiemann & Co., 67 Chatham Street; Darrow & Co., 1227 Broadway; Otto & Reynders, 64 Chatham Street; Shepard & Dudley (formerly Ford & Co.), 150 William Street; Stohlmann, Pfarre & Co., 107 East Twenty-eighth Street.

Books will be received and forwarded by Wm. Wood & Co., No. 27 Great Jones Street.

It may be necessary to add in explanation of the diversion of a portion of the funds originally intended only for the physicians of Chicago, that the probability of an appeal from the physicians of the burnt districts of Michigan and of Wisconsin determined the committee to reserve a small portion for such an exigency: and further, that in consideration of the fact that the medical students of this city have given very liberally to this fund, it was determined to suggest, to those having in charge the distribution of these charities, that they

will not overlook the claims of medical students who may in the same manner have been left destitute.

Frank H. Hamilton, M. D., *Chairman.*
Alfred E. Purdy, M. D., *Secretary.*
Samuel T. Hubbard, M. D., *Treasurer.*
Geo. F. Shrady, M. D.,
Chas. McMillan, M. D.,
Ed. S. Dunster, M. D.,
A. Underhill, M. D.,
John C. Peters, M. D.,
F. A. Castle, M. D.,
F. A. Burrall, M. D.

Condurango in England.—This so-called remedy for cancer has been condemned as absolutely useless by all who have experimented with it thoroughly in this country; and the same results have been arrived at by a trial of it in several English hospitals, as will be seen by the subjoined report of Mr. Davidson, House-Surgeon to the Middlesex Hospital, London, which we find in the *Lancet* of November 4th:

Many of our readers may be aware that in the first part of the present year a quantity of condurango-root—vernacularly called the "vulture-plant"—was sent by the President of the Republic of Ecuador to the Queen of England, with the statement that it had been tried by several of the doctors in the republic, and had proved to be a cure for cancer, syphilis, and phthisis. As any remedy reputed to be of service in such destructive and fatal diseases was worthy of trial by physicians and surgeons in this country, Lord Granville, at the expressed wish of her Majesty, sent a packet of the condurango-root to the College of Physicians, at whose disposal it was placed. Accordingly, it was divided by them into three parts, one to be sent to the Radcliffe Infirmary, Oxford, another to St. Bartholomew's Hospital, and the third to the Middlesex Hospital. The report which accompanied the quantity sent to the Middlesex Hospital contained the account of one or two cases of syphilis and of epithelioma in the ulcerative stage which were said to have been cured by the administration of the drug. It was stated that those who were submitted to the treatment were "*reconstituted*" in four or five days, and that improvement began to take place from the date of "reconstitution." But it was also asserted that nervous commotions, such as those produced by strychnia, in some cases followed its exhibition. From Mr. Hulke's report of the cases on whom he tried it in the Middlesex Hospital we learn that he commenced its use

in four cases, of which one was a scirrhus of the breast and the other three epitheliomata. After a few days, however, as it appeared that the quantity of condurango received from the College of Physicians would be insufficient to supply all the patients with the proper daily doses of the decoction for more than a very short time, it was discontinued in the case of scirrhus of the breast and in one of the cases of epithelioma of the penis.

None of the patients while taking the condurango exhibited the "serious nervous phenomena" mentioned by Dr. Joseph Equigusen, and in none of them has the reputed remedy exerted the slightest influence in retarding or modifying the course of the cancer, or in improving the general condition of the patient. In each patient the pulse-rate and temperature were recorded twice daily during the whole time the condurango-treatment was continued. Mr. Hulke adds: "As a reputed remedy for cancer, condurango is in my opinion perfectly inert and useless."

The condurango was given in the form of a decoction, prepared strictly in accordance with the directions contained in the memorandum received with the stems from the College of Physicians. It was of the color of brown sherry, and each pint of the decoction contained an ounce of the plant. Of this decoction five ounces were taken night and morning, and after a few days, as all the patients complained of flatulence, half a drachm of tincture of ginger was added to each dose.

Refrigeration of Warm-blooded Animals.—In a recent number of the *Centralblatt* (xxxiv.), Dr. Horvath, of Kiev, reports upon some interesting results which he has derived from his experiments on the refrigeration of warm-blooded animals: 1. Refrigeration was carried to such a degree in a young dog, that the temperature in the rectum descended to 6.6°, 5.8°, and even to 4.8° C. (44° to 40° F.), and yet the animal, on the reapplication of heat, revived, being then apparently in much the same condition as before the refrigeration. As far as Dr. Horvath is aware, no one had hitherto seen a warm-blooded animal restored to life after such a reduction of temperature. 2. In other experiments he has reduced the temperature (in the rectum) of a rabbit to 7° C. (45° F.), and of a cat to 9.5° C. (49° F.), and found that neither the action of the heart nor the respiratory movements could be perceived. Nor did even the strongest electrical current exert the slightest effect either upon the muscles of the skeleton or directly upon exposed nerves. On the restoration of warmth, by pouring warm water over these animals, which had remained for an hour in a state of apparent death, spontaneous contractions of the heart, which had

ceased for an hour, were observed. The electrical current, also, applied directly to the muscles, induced energetic contractions in the same muscles which, before the warmth was applied, were insensible to the strongest electrical action. 3. A third interesting and not less important fact is, that in an animal which was first refrigerated and then warmed, it was not possible to excite the action of the muscles of the skeleton by even the strongest electrical stimulus when applied to their nerves, while these same muscles, on the direct application of the current, contracted energetically. The fact that we can separate nervous and muscular energy from each other by this agency, which hitherto it has only been possible to do by the employment of curare, promises to be of good service in future researches concerning the physiology of the muscular and nervous system.—*Medical Times and Gazette.*

Absorption of Insoluble Matter.—The Philadelphia *Medical Times* publishes an abstract, by Dr. Louis A. Duhring, of a series of experiments made by Dr. Auspitz, of Vienna, on the absorption of insoluble matter in mammals. The following are the conclusions arrived at:

1. That, in mammals, insoluble matter (starch-flour granules), starting from the peritonæum and subcutaneous tissue, is able to reach the lungs, and through these organs to enter the general circulation.

2. That these granules, in order to go over into the veins, pass through the lymphatic system. (That they are taken up exclusively in this way, is not as yet proved.)

3. That the epidermis always presents a considerable, though only relative and not absolute, obstruction to the absorption from the integumentary surface.

4. That the absorption is essentially promoted by the mediation of fat, which goes over into the circulation in the same manner as starch-flour, though even more easily.

Finally, the supposition may be offered, even if the direct proof is provisionally deficient, that all that is true of starch-flour, and in a higher degree of fat, may also be asserted of other insoluble bodies of finer division and, therefore, less permanence of form than the starch-flour. The supposition is not in any way contradicted by the discoveries of Auspitz, made in connection with his well-known inunction experiments with mercury.

Electro-puncture of the Heart.—Puncture of the heart has been resorted to in chloroform narcosis, and on two occasions the galvanic current has been passed through the needle.

Notwithstanding the want of success that has attended the practice, Dr. Steiner, of Vienna, has been further investigating the subject, and details his experiments and conclusions in the *Archiv. f. Klin. Chir.* Having recapitulated the facts known as to recovery from penetrating wounds of the heart, and the effects of puncture of this organ with needles in fourteen experiments on animals, Dr. Steiner repudiates the fear that electro-puncture of the heart might injure by caustic action, or by setting free gas, as only a weak current should be used. Dr. Steiner narcotized ten animals with chloroform, and was able to restore six out of the ten. The conclusions he arrives at are that electro-puncture of the heart is not dangerous, and that it should be tried when the heart's action suddenly fails. He prefers it to artificial respiration, but he would employ this in addition, as soon as there is any sign of a return of the heart's action. The positive pole is to be applied to the puncture-needle, the negative being placed in the seventh intercostal space on the left side. There can be no doubt that this is a most powerful mode of stimulating the heart, and it is likely, also, to excite respiratory movement. Whether many men would like to resort to it, even in extreme cases, seems to us very doubtful.—*The Doctor.*

Poisoning by Mercurial Lotions.—In commenting on the recent case of fatal poisoning in England by the use of lotion of corrosive sublimate, sixty grains to the ounce, the *Medical Press and Circular* utters the following warning:

As a general rule, it would be as well for all of us to remember that such cases have been from time to time recorded; and then we shall be more cautious in our use of mercury. If, indeed, it were clearly proved that mercurial lotions were *absolutely* necessary for the cure of ringworm, we should, of course, have to take our chance of fatal consequences; but when we know that blistering fluid will cure this affection probably more rapidly than any other remedy, it seems needless to have recourse to very strong lotions of corrosive sublimate. It would really be quite a blessing to mankind were it possible to get rid of the use of mercury as an internal remedy, and as a remedy for external application. There is, doubtless, far less of the metal used now than formerly, but it is still too popular in syphilis and iritis to make it likely to disappear from practice. Meanwhile, we should be ever watchful, and see that such cases as that alluded to sink deeply into our minds.

A Sound lodged in the Uterus.—Drs. Petreguin and Foltz (*Schmidt's Jahrbücher*) report the following: A woman

allowed a midwife to introduce a sound into her uterus for the purpose of procuring abortion. The sound disappeared in the genitals and could not be found. Abortion followed. About four months later the woman observed a small tumor near the umbilicus, which proved to be the head of the sound. The os was dilated by means of a sponge-tent, and in the anterior wall of the uterus the other end of the sound could be felt, which had perforated the uterus near the internal os, and had penetrated upward between the bladder and uterus. The handle of the sound could only be felt in the uterine parenchyma when the woman had been walking about some time. Attempts to remove the sound by way of the vagina failed, and it was finally taken away through an incision made into the abdominal parietes. Recovery followed without further disturbance.—*American Practitioner.*

Prize Essays.—In accordance with the will of the late Dr. Lacaze, a prize of ten thousand francs is to be awarded by the Faculty of Medicine of Paris, every second year, to the best work on phthisis, and on typhoid fever, alternately. The first prize will be awarded at the end of the academical year 1871–'72, for the best work on phthisis. Essays (with a distinguishing motto and the author's name in a sealed envelope) must be sent in before July 1, 1872. The prize is open to foreigners.—*Medical Record.*

Obituary.

Samuel Solly, M. D., F. R. S., died in London, September 24th, in the sixty-sixth year of his age. He was formerly Senior Surgeon and Lecturer on Surgery to St. Thomas's Hospital, and was President of the Royal Medical and Chirurgical Society in 1867–'68. Mr. Solly had made extensive contributions to medical literature, but was chiefly known in this country through his work on the "Human Brain." Notwithstanding the duties of the many public positions he filled, and those consequent on a considerable practice, he attained such proficiency as an amateur artist that his pictures were exhibited at the Royal Academy. His health had been failing for some time, and for more than a year he had been unable to attend to his professional duties.

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